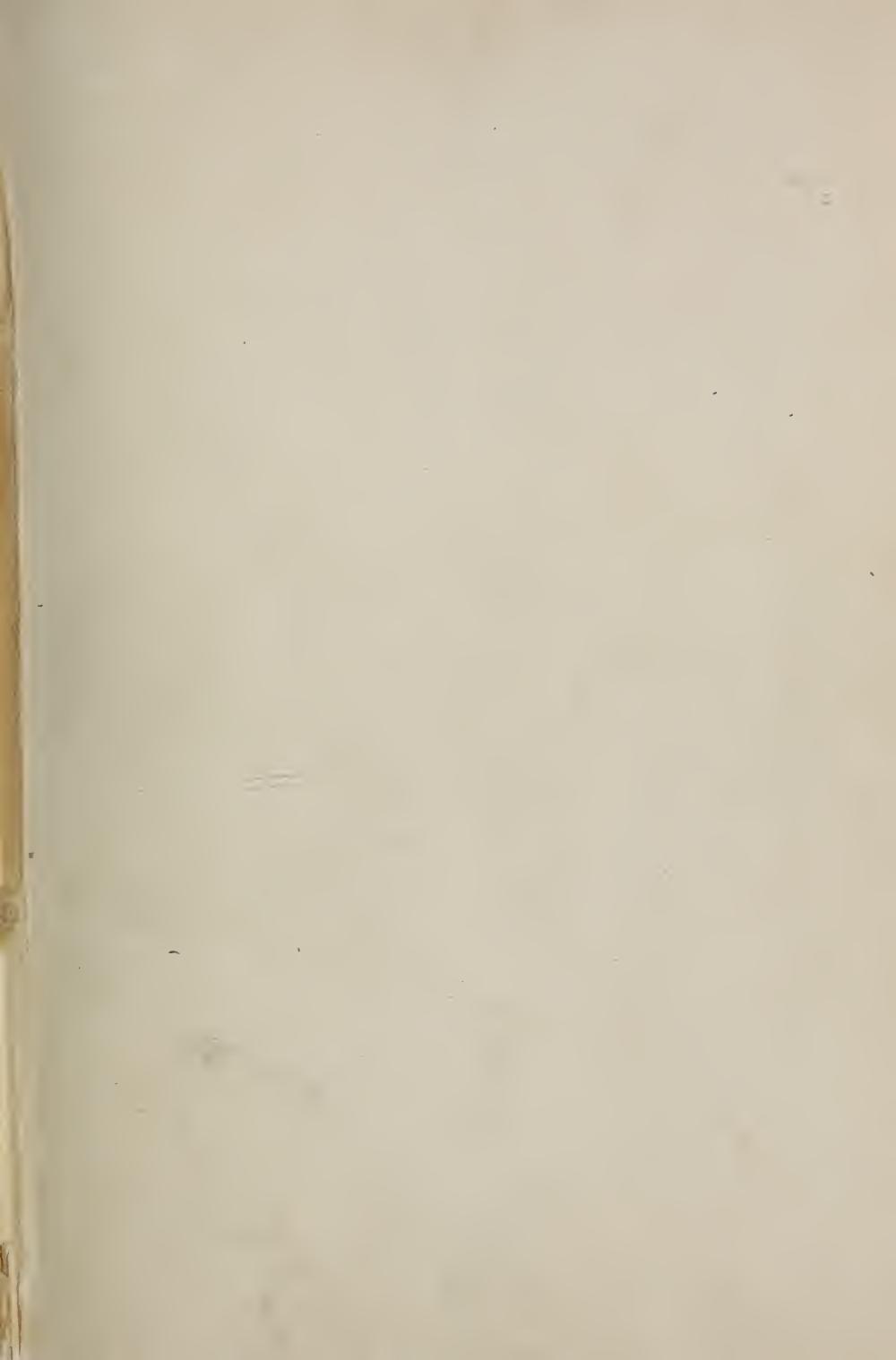


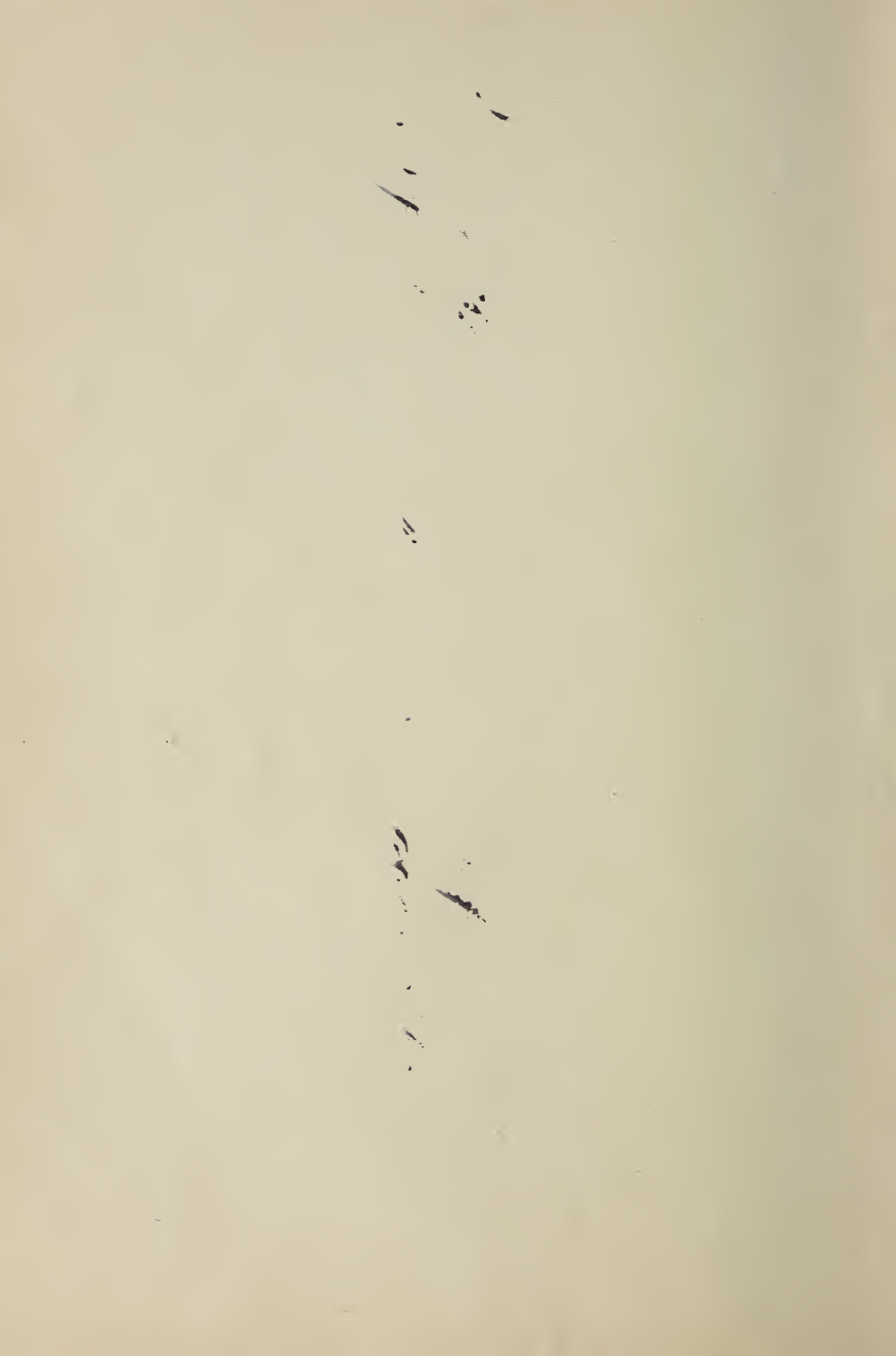
LIBRARY OF CONGRESS.

Chap. BF131 Copyright No. _____

Shelf G6

UNITED STATES OF AMERICA.





LESSONS IN PSYCHOLOGY

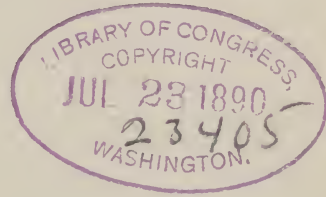
DESIGNED ESPECIALLY FOR

PRIVATE STUDENTS, AND AS A TEXT BOOK IN
SECONDARY SCHOOLS

BY

J. P. GORDY, PH. D.

*Professor of Psychology and Pedagogy in Ohio University,
Athens, Ohio*



COLUMBUS, O

HANN & ADAIR, PRINTERS

1890

BF131
G6

PREFACE.

LESS than a year ago, a number of teachers at an institute which the author was attending, requested him to give them Correspondence Lessons in Psychology. He consented without adequately considering the amount of labor it would involve. For a little reflection enabled him to see that the only author he could recommend to them — Sully — was much too difficult for students of their attainments. He soon saw that the labor of explaining so difficult a book would be much greater than that of writing lessons directly for them week by week. He accordingly decided to do this, and this little book is the result.

This account of its origin will explain a number of its characteristics. As appears from its title, it does not undertake to discuss, even in a superficial way, all the phases of mental activity. It deals only with those facts and laws of mind, which, in the judgment of the author, it is most useful for teachers to be familiar with.

The style of the book, as the reader will at once see, is colored by the fact that it was originally written for a class of teachers, with most of whom the author was personally acquainted, and whom

he had in his mind as he wrote. Although the "Lessons" have been carefully revised, he has not thought it necessary to carry the work of revision to such an extent as to take from them that familiar tone which he thought proper to use in addressing a class of pupils.

The book lays no special claim to originality. The object of the author throughout has been to call the attention of his readers to important mental facts in such a way as to set them to observing their own minds and the minds of their pupils, in order to see whether or not he was right. Profoundly convinced as he is, of the importance of a knowledge of Psychology to the teacher, he is quite as strongly convinced that the only really fruitful knowledge of Psychology which the teacher will ever gain he will derive from a study of his own mind and the minds of the people with whom he comes in contact, and that books about Psychology are useful chiefly as they give suggestions in this direction. Accordingly, the aim of the author throughout has been to act the part of a guide in a strange city—tell his readers where to look to find valuable truths. If he succeeds in stimulating them to become diligent students of their own minds and the minds of their pupils, he will be more than satisfied.

J. P. GORDY.

Athens, Ohio, July 7, 1890.

CONTENTS.

LESSON I.	PAGE
The Benefits of Psychology to the Teacher ...	9
LESSON II.	
The Benefits of Psychology to the Teacher.— Continued	18
LESSON III.	
What is Psychology.....	27
LESSON IV.	
The Method of Psychology.....	36
LESSON V.	
What are We Conscious of.....	45
LESSON VI.	
What are We Conscious of.—Continued.....	55
LESSON VII.	
Attention.....	64
LESSON VIII.	
Attention.—Continued.....	72
LESSON IX.	
Attention.—Continued	82

LESSON X.

Knowing, Feeling and Willing 91

LESSON XI.

Sensation and Perception 100

LESSON XII.

Sensation and Perception.—Continued 108

LESSON XIII.

Sensation and Perception—the Cultivation of
the Observing Powers 116

LESSON XIV.

The Cultivation of the Observing Powers.... 125

LESSON XV.

Memory and the Laws of Association 134

LESSON XVI.

Memory and the Laws of Association.—Cont'd 141

LESSON XVII.

Imagination 149

LESSON XVIII.

Imagination.—Continued 157

LESSON XIX.

Imagination.—Continued 165

LESSON XX.

Conception..... 173

LESSON XXI.

Conception.—Continued 181

LESSON XXII.

Conception.—Continued 190

LESSON XXIII.

Conception.—Continued 199

LESSON XXIV.

Conception.—Continued 207

LESSON XXV.

Conception.—Continued 215

LESSON XXVI.

Judgment 223

LESSON XXVII.

Reasoning 232

LESSON XXVIII.

Reasoning.—Continued 240

LESSON XXIX.

Reasoning.—Continued 248

LESSON XXX.

Reasoning.—Continued 256

LESSON XXXI.

Reasoning.—Continued 264

LESSON XXXII.

Reasoning.—Concluded 271

LESSON XXXIII.

The Primary Intellectual Functions 279

LESSON XXXIV.

The Primary Intellectual Functions.—Cont'd. 287

LESSON XXXV.

The Primary Intellectual Functions.—Cont'd. 296

LESSON XXXVI.

Development 305

LESSON XXXVII.

Development.—Continued 314

LESSON XXXVIII.

Development.—Continued 323

LESSON XXXIX.

Development.—Continued 330

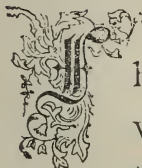
LESSON XL.

The Study of Children 338

LESSONS IN PSYCHOLOGY.

LESSON I.

THE BENEFITS OF PSYCHOLOGY TO THE TEACHER.

 I have no doubt that you believe that it is worth while for you to study a great many things which you do not expect to make any practical use of. You believe, for example, that it is a good thing to study algebra, and geometry, although I imagine you do not expect to find any use for them in the business of life; you want to study them, not because you think the knowledge of them is likely to be useful to you—unless you should be called upon to teach them—but because you think the study of them will develop your mind.

Probably that is one of the reasons why you wish to study Psychology. And it certainly is a good reason for studying it. I know of no subject better calculated to develop the power of *thinking*

than Psychology. You know very well that the way to develop any power of the mind is to use it, and it is quite impossible to make any headway in studying Psychology without thinking. That is the reason why it is so hard. When any one makes an assertion about your mind—and that is what Psychology consists of, assertions about your mind and the minds of all human beings—it is often, indeed, generally, impossible to realize what it means without thinking. Thus, suppose I say that a mental fact is known directly to but one person only, and that one the person experiencing it. In order to realize what that means, you have to look into your own mind for an example of a mental fact. You recall the oft-repeated assertion, nobody knows what one thinks but himself, and you realize that a thought is a mental fact known to but one person directly, and that one the person experiencing it. But in order to know what other facts are mental facts, you must think long and carefully until you have made up your mind just what facts are known to but one person directly, and that one the person experiencing them.

And even when you can understand an assertion which any one makes about your mind without

looking into your own mind, it is generally necessary for you to do so before you can decide intelligently whether or not it is true. (Thus, suppose I say that no matter how interesting you make your recitations, you cannot get the continuous attention of your pupils unless by asking questions, or by some such means you give them some other motive for attending besides interest. That statement you can understand without special effort. But in order to determine whether or not it is true you must *look into your own mind*. You must ask yourself whether any one can keep your attention for a half or three-quarters of an hour simply by being interesting. And if you set about answering it in the right way, you will think until you recall some speaker who was interesting, but who never asked you questions, or did anything to keep your attention except try to interest you, and I am sure you will remember that your mind wandered when he was speaking, much more than it would have done if you had known that he would question you about what he was saying when he had finished.

For these two reasons — (1) because you cannot understand most of the assertions in Psychology without thinking; and (2), because even when you

understand them you cannot tell whether or not they are true without thinking — I know of no subject better calculated to make a pupil think, and, therefore, better fitted to develop the power of thinking than Psychology.

But apart from this, I imagine that you wish to study Psychology for quite practical reasons. As a man who intends to be a surveyor studies trigonometry, not merely because it will develop his mind but because of the use it will be to him, so you study Psychology because you think the knowledge of it will make you a better teacher.

How will it help you in this direction? Before you can answer this question you must answer another. What is teaching? People used to intimate their opinion of the true answer to this question by saying that a teacher "keeps school." But "keeping school" is not teaching. Nor is it to teach to hear recitations. To teach is to deal with mind, is to get it to *do* something which it would not have done apart from the teacher, in order to get it to *become* something which it would not have become apart from him. I repeat — and I ask you to notice this statement carefully — to teach is to get the mind to do something or rather many things which it would

not have done apart from the teacher, in order to get it to become what it would not have become apart from him.

Now, in order to do this intelligently you plainly need to have as clear an idea as possible of what you want your pupils to become. You take charge of a school and have a lot of boys and girls whom you want to make different from what they are. If they were everything that you want them to become you would not undertake to teach them. What is it that you want them to become? In other words, in what respect do you wish them to change as a result of your teaching? That question, the study of Psychology will help you to answer, and the more you know about it, the more clearly and fully and definitely you can answer it.

Quite likely you think you can answer it now. You say you want your pupils to have better developed minds at the end of each day than they had at the beginning. But better developed in what direction? Have you ever asked yourself that question? The North American Indians, for example, had remarkable powers of observation. They could track an enemy through a forest where you could have seen no evidence that a human

being had ever been. Will you be content to have your pupils acquire powers similar to those possessed by the North American Indians? Is this what you want them to become? Again, the Chinese have remarkable memories. I suppose there are plenty of educated Chinamen who remember almost word for word the nine classics written and compiled and edited by Confucius. Do you want your pupils to have minds like the Chinese? Is this what you want them to become?

So you see that when you say you want to help your pupils develop their minds you have by no means proved that you know precisely what, as an intelligent teacher, you ought to aim at. And it seems to me that unless you know what to aim at you cannot hope to have success. Do you think an architect could build a beautiful house if he began to build it and worked at it from day to day without having in his mind, so to speak, the house he was trying to build? Well, if a carpenter must have a picture in his mind of the kind of house he wants to build in order to build it, how can you hope to succeed in moulding and shaping and forming the minds of your pupils in an intelligent way?

unless you have the clearest ideas of what you want them to become?

But at any rate, perhaps you think you are clear of one respect in which you want your pupils to change: you want them to become less ignorant—you want them to know more. But to know more of what? You have not got very far when you say that you want to help your pupils to acquire knowledge, unless you have made up your mind what knowledge is worth acquiring. You need to know very clearly that there is a good deal of history in the text-books which is not worth learning, and a good deal out of them which is in the highest degree important, and the same is true of the other subjects you teach. How are you to make up your mind what knowledge is really worth acquiring? I think the study of Psychology will help you to do that. It will help you to see the effect which the acquiring of this or that piece of knowledge will have on the mind, and when you see that you will know how to estimate its worth.

And here again I think you see that it is quite impossible for you to succeed in teaching unless in some way you are able to decide intelligently what you ought to get your pupils to learn. Until you

are able to decide that you can only aim in the first place to get them to learn everything in the text-book. And this is bad for two reasons: in the first place, text-books are often written by men who know so little of what they are writing about that they cannot tell what is important and what is not important. And in the second place, intelligent men put many things in text-books not that students may learn them, but that they may be able to refer to them if they have occasion to use them. No one but a fool would commit to memory a railroad guide. And yet railroad guides are very useful, but when any one has occasion for that kind of knowledge he goes to the guide and remembers what he finds there just as long as he wants it and then does not trouble his head with it any more. Now, intelligent men put many such facts in the books they write — facts which they do not expect any one to learn, but which they think persons may sometimes have occasion to refer to. For these two reasons, it is very unfortunate for a teacher to have to rely entirely on his text-books in deciding what to teach.

Note carefully that in this lesson I have been trying to show you that a study of Psychology will

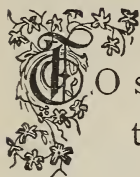
help you to see at what you ought to aim. It will help you to see the kind of development you ought to try to help them get, and the kind of knowledge you ought to try to teach them.

LIST OF QUESTIONS.

1. What are the two reasons for studying Psychology?
2. How is any power of the mind developed?
3. What are the two reasons which make the study of Psychology so useful in developing the power to think?
4. What is teaching?
5. Give two illustrations to show that when you say you want your pupils to have better developed minds your statement lacks clearness.
6. Show that you cannot succeed as a teacher unless you know what to aim at.
7. Show that when you say you want to make your pupils less ignorant your statement lacks clearness.
8. How will the study of Psychology help you in this direction?
9. Why should not a teacher limit himself to teaching what is in text-books?
10. What is the central thought which this lesson aims to bring out?

LESSON II.

THE BENEFITS OF PSYCHOLOGY TO THE TEACHER.



O succeed well in any difficult undertaking, three things are necessary: (1), one must see clearly the thing to be done; (2), he must have a clear idea of the best means of doing it; and (3), he must have a strong motive for doing it well. He in whom these conditions meet most perfectly — who sees most clearly the thing to be done, who has the clearest perception of the best means of doing it, who has the strongest motive for making strenuous efforts to do it, is the likeliest person to succeed in any difficult undertaking.

I do not believe the study of Psychology can be urged on the ground that it is likely to do much toward making the teacher interested in his work, and more willing, therefore, to work hard in order to do it well. I think, indeed, that it is not without effect in that direction. The work of teachers who make no study of mind is likely to be mechanical, while the work of teachers who base their efforts on a knowledge of mind is rational. And mechanical work is uninteresting, unattractive —

fit only for machines. Anything, therefore, which tends to make a teacher's work rational certainly tends to make it interesting. I think that this was what Fitch meant when he called teaching the noblest of arts and the sorriest of trades. Practiced mechanically, it is indeed a trade, and a sorry one at that; practiced rationally — practiced by one who realizes that he is dealing with mind, and who uses this method or that not because some one else has used it, but because his knowledge of mind leads him to believe that it is the best, it is the noblest of arts.

But while I believe that the study of Psychology is of some benefit to the teacher in that it tends to give him more interest in his work, I do not intend to urge it on this ground. It is for the other two reasons (1), because of the clearness which it is fitted to give to the aim of the intelligent teacher, and (2) because of the light it throws on the best methods of realizing that aim, that it seems to me no teacher who is ambitious to succeed should neglect to study it as thoroughly and as faithfully as possible.

In the last lesson I tried to show you what the study of Psychology can do for you in the first di-

rection. I tried to show you that when you are able to say that your aim is to bring about the development of your pupils, you have not got very far unless you have made up your mind as to the value, so to speak, of the various faculties of the mind — that unless you know the worth of the observing powers, and of the various kinds of memory, imagination, and reasoning, you cannot proceed intelligently in training them. And in like manner, unless you have made up your mind as to “what knowledge is of most worth,” I tried to show you that it is of little use to be able to say that you want to induce your pupils to acquire knowledge. I tried further to show you that Psychology, by helping you to see the relation of the various powers of the mind to each other, will help you to see the kind of development you ought to aim at; and also, that by helping you to see the effect of the various kinds of knowledge upon the mind it will help you to decide “what knowledge is of most worth.”

But not only will the study of Psychology tend to give clearness and definiteness to your aim, it will tend quite as strongly, if not more so, to show you what you must do to realize that aim.

In dealing with mind we must use the same kind of methods which we use when we deal with objects in the material world. What we accomplish in the material world we accomplish by putting objects where they will be subject to new influences, so that the laws of nature may do the work we want. Mortar in one place and bricks in another do nothing to make the walls of a house, but put the bricks on a strong foundation, and put the mortar between them, and you have a strong wall. All you have done, you will note, is to *move* the bricks and mortar so as to put them in new positions and make them subject to new influences, so that the laws of nature could do the work you wanted. Heat water to the boiling point and it will change into steam, and if you leave it where it can escape nothing will come of it. But move the water into a confined place so that the steam cannot escape, and then you can make it drive immense palaces across the sea, or pull huge trains across the continent. Every invention which has ever been made is simply a way of moving things into new positions where they are subject to new influences, so that the laws of nature may do the desired work. *All the force that is em-*

ployed in nature exists in nature. All that man accomplishes he accomplishes by making the forces of nature work under different circumstances, and by turning them into different channels from those in which they would have worked apart from him. It is by making nature our servant that we have made such wonderful progress in material civilization in the nineteenth century. And how is this that we have been able to make nature work for us in such wonderful ways? Simply by knowing the laws of nature. Knowing the laws of nature, we have been able, so to speak, to foresee what she would do under certain circumstances, and the result is the steam-engine, the telegraph, the telephone, the phonograph, and all the other inventions which minister to our well-being.

Now, as I have already said, in dealing with mind we must work in the same way. Precisely as everything which happens in nature, is due to the laws of nature, so everything which happens in mind is due to the laws of mind. Precisely as our power in nature depends upon the skill with which we get her to work for us, so our power in dealing with mind depends upon our ability to get it so to act that the results

we desire will follow. Precisely as success in dealing with nature consists in supplying the conditions which make it possible for nature to do the desired work, so success in dealing with the mind consists in supplying the conditions which make it possible for the mind to do the work we want. And precisely as the better we know the laws of nature, in other words, the better we know the conditions under which nature will produce this or that result, the better we can supply them, so the better we know the laws of the mind, the better, in other words, we know the conditions under which the mind will do this or that, the better we can supply them. The aim of the teacher being a certain kind of development, and the communication of a certain kind of knowledge, evidently the more he knows of the conditions under which the mind develops, and the conditions under which it acquires knowledge, the better he can supply them.

Do you ask if a corresponding increase in the teacher's knowledge of mind, and a corresponding increase in his skill in basing his work on that knowledge would enable him to work such miracles in the minds of his pupils as inventors have worked in nature through their knowledge of the laws of

nature? I cannot, of course, answer such a question. No one can. But in the School of the far-off Future—when no teacher will be allowed to enter a school-room who has not made a thorough study of Psychology, and who has not proved to the entire satisfaction of competent judges his ability to apply what he has learned—in that school there will be no dull, listless, inattentive pupils. There will be no boys who leave school because they do not like it. There will be no pupils who hate books. As a child learns not only rapidly but with intense pleasure from the time of his birth to the time he starts to school *simply because the activities in which he spontaneously engages are fitted to his state of development, so he will continue to learn rapidly and with intense pleasure after he starts to school if the work he is set to doing is adapted to his state of development.* Do you know who Comenius was? It was he who said if our pupils do not learn it is our fault. And he was undoubtedly right. If we supplied the proper conditions our pupils would as certainly learn as a train will move when the engineer turns on the steam. Do you know who Pestalozzi was? It was he who said that if pupils are inattentive the

teacher should first look to himself for the reason. And he also was undoubtedly right. As certainly as a blade of corn will grow and mature if it is treated right—if the proper conditions are supplied—so certainly will our pupils attend, and think as the result of attending, and develop as the result of thinking, if we supply the proper conditions.

LIST OF QUESTIONS.

1. What three things are essential to success in a difficult undertaking?

2. What can the study of Psychology do to make a teacher interested in his work?

3. What did Fitch say about teaching, and what did he mean by it?

4. How will the study of Psychology help a teacher to see at what he should aim?

5. How do men accomplish anything in nature?

6. Illustrate your statement.

7. Show that the same thing is true in our dealings with mind.

8. Do you believe that teachers could accomplish as wonderful results in dealing with the minds of their pupils as inventors have accom-


plished in dealing with nature if they knew as much about mind?

9. Why do so many pupils dislike the work of school?

10. What did Comenius say was the reason our pupils do not learn?

LESSON III.

WHAT IS PSYCHOLOGY?

IN the last two lessons I tried to show you that the study of Psychology will help you to see the goal which you should try to reach, and what course you should take in order to reach it. But while we have been talking about how Psychology will help you in teaching, the question, what is Psychology? has been left unanswered. That question I shall try to answer in this lesson.

The answer usually given is that Psychology is the science of the mind or soul. But what is the soul? People who have not thought carefully about it would probably say that whatever it is, it certainly is not the mind. Animals, they would say, plainly have minds, but no one believes that they have souls. I think it may serve to give clearness to our ideas to consider the question whether or not animals have souls. And without doubt *in the confused sense in which the word is used in popular language* the true answer is that they have. If you

suppose that animals have no souls let me ask you if you have one. You will undoubtedly say that you have. Suppose I ask you whether you are always dreaming when you are asleep? You will probably answer that you are not. And when you say that you are not dreaming, what do you mean?

"I mean," I imagine you saying, "that there are no thoughts or feelings in my mind."

"And when there are no thoughts and feelings in your mind does your soul continue to exist?"

"I do not understand you."

"You say that you do not think you are always dreaming when you are asleep, and when you say that you are not dreaming you say that you mean that you have no thoughts or feelings in your mind. So far as thoughts and feelings go, I understand you to say that you are exactly like a dead man. A dead man has no thoughts and feelings, neither have you when you are not dreaming. Now, when you have no thoughts and feelings in your mind, does your soul continue to exist?"

"I certainly believe it does, as I have no reason to believe that it ceases to exist when I fall asleep and begins to exist as soon as I awake, as

must be the case if it ceases to exist when I have no thoughts and feelings."

"Then you do not mean by soul the thoughts and feelings of which you are conscious, or a part of those thoughts and feelings?"

"Again I do not understand you."

"You say that your soul does not cease to exist when you have no thoughts and feelings; now, if it does not, your soul cannot be your thoughts and feelings, can it?"

"Why not?"

"Because if it were, when you have no thoughts and feelings you would have no soul, would you?"

"I see that I would not have."

"And it cannot be a part of your thoughts and feelings, can it?"

"No, for if it were any part of them when I had none of any kind I would have no soul."

"You mean by soul, then, not thoughts and feelings, but the thing that *has* thoughts and feelings?"

"Again I am obliged to say that I do not understand you."

"A German professor is said to have begun a first lesson on Psychology in this way: 'Students,

think about the wall.' After a moment's pause, 'Now think about the thing that thinks about the wall. The thing that thinks about the wall is what is to be the subject of your study.' That is what you mean by soul, is it not—the thing which thinks and feels, the thing which has thoughts and feelings?"

"It is."

"And what do you mean by mind?"

"I mean that which thinks and feels, or that which has thoughts and feelings?"

"But things which are equal to the same thing are equal to each other, are they not?"

"They are."

"And if the soul is that which thinks and feels, and the mind is that which thinks and feels, they must be the same, must they not?"

"I see that they must."

"If then you say that dogs, for instance, have minds, can you refuse to admit that they have souls?"

"I am obliged to confess that I cannot."

In this imaginary dialogue you may say that in the nature of the case I can prove what I want to prove, since I can put any words in your mouth

I please. But if you will carefully consider it, you will see that you are obliged to say that the soul is one of three things: It is either *all* of our thoughts and feelings, or a part of them, or the thing which *has* thoughts and feelings, the thing which thinks and feels and wills. If you say that the soul is all or a part of our thoughts and feelings — mental facts, in a word — then instead of saying that Psychology is the science of the soul it would be much plainer to say that Psychology is the science of mental facts. But if you say that the soul is that which thinks and feels and wills, then, as we have seen, there is no difference between soul and mind, and we are left with the definition, Psychology is the science of the mind.

But what do you mean by mind? What we have seen in the case of the soul — that it consists of thoughts, feelings, and acts of the will, or *that which* thinks, feels, and wills — is plainly true of the mind also. It must either be *that which* thinks, feels, and wills, or it must be the thoughts, feelings, and acts of will of which we are conscious — mental facts in one word. But what do we know about *that which* thinks, feels, and wills, and what can we find out about it? Where is it? You will

probably say, in the brain. But if you are speaking literally, if you say that it is in the brain, as a pencil is in my pocket, then you must mean that it takes up room, that it occupies space, and that would make it very much like a material thing. In truth, the more carefully you consider it, the more plainly you will see what thinking men have known for a long time — that we do not know and can not learn anything about the thing which thinks and feels and wills. It is beyond the range of human knowledge. The books which define Psychology as the science of the mind have not a word to say about that which thinks and feels and wills. They are entirely taken up with these thoughts and feelings and acts of the will — mental facts in a word, trying to tell us what they are, and arrange them in classes, and tell us the circumstances or conditions under which they exist.

It seems to me, therefore, that it would be much better to discard these old definitions and say that Psychology is the science of mental facts, not because the old definitions are untrue, but because they are vague and indefinite.

But what is a mental fact? Let us say to start with that it is a fact known directly to but one per-

son, and that the person experiencing it. If you are standing on the street with a half dozen friends, you can all see the houses, and men, and women, and horses. You can all hear the tramping of feet and the clatter of the vehicles that pass along the street. These facts are open to the observation of all of you alike. But there is a class of facts known directly to but one of you—what you think and feel and will, you know, and no one else does; what A thinks and feels and wills he knows and no one else does. These thoughts and feelings and volitions are mental facts—facts known to but one person, and that the person experiencing them.

But I believe there are mental facts not known to any one. If you are intent upon a book the clock may strike and you may not hear it at the time, and a minute after you may be entirely sure that you heard the clock strike a minute before, although you did not know that you heard it. The true explanation of facts like these seems to be that the clock produced a sensation of sound at the time it struck, and in the sense of having received a sensation of sound because of it, you heard it. But you did not know that you heard it until the minute after. Now what must we call this

sensation? Plainly a mental fact, although there was a time when it was not known by any one. Still, however, it is marked off quite sharply from all other facts—physical facts, we may call them, which may be known with equal directness by any number of people—by the circumstance that although not known, it is knowable by but one person, and that the person experiencing it. We may then define a mental fact as a fact known or knowable to but one person directly and that the person experiencing it, and Psychology as the science of mental facts, the science which undertakes to ascertain, classify and state the conditions of mental facts.

LIST OF QUESTIONS.

1. How is the question, "What is Psychology," usually answered?
2. Would you say that dogs have souls?
3. How would you defend your answer?
4. What is the objection to defining Psychology as the science of the mind or soul?
5. How would you define Psychology?
6. What is a mental fact?
7. What is a physical fact?


8. Into what two classes would you put mental facts?

9. Can you have mental facts without knowing that you have them?

10. Give examples.

LESSON IV.

THE METHOD OF PSYCHOLOGY.

N the last lesson, I tried to make clear the subject of which Psychology treats. I objected to the usual definitions, "Psychology is the science of the soul," "Psychology is the science of the mind," not because they are incorrect, but because I do not believe they give young students definite ideas. I want you to get at the outset the clearest possible notion of the subject you are to study. I want you to realize that the facts of which you are directly conscious, the facts which you know better than any one else in the world—that these and similar facts form the subject of which Psychology treats.

"But what is it," perhaps you ask, "that Psychology wants to do with them, and what kind of mental facts does it care about. I had the toothache last week. That, if I understand you, was a mental fact, but Psychology has no interest in facts like that, has it?" No and yes. That you, John Smith, had the toothache is a matter of su-

preme indifference to Psychology. Psychology has no more interest in that fact than has the science of Botany in the fact that you have a bed of geraniums. Like all sciences, its aim is general knowledge, and that you, John Smith, had the toothache is not general knowledge. But when you had the toothache you found it difficult to study, did you not? I am sure you did. If you will think a little, you can recall a great many facts like that in your experience. Not only intense pain but very keen delight are unfavorable to that concentration of mind which we call study. You got a letter some time ago that made you very happy, and you remember that you could not put your mind on anything for an hour, and if you will study the mental facts of other people you will find that their experience is like yours. So that you see that although Psychology cares nothing about *you* as an individual, nor your toothache, there was something in that experience which it does care about. *So far as your experience illustrated what would be true of all minds under similar circumstances, so far it is a matter of interest to Psychology.*

It is putting the same idea in another form to

say that what Psychology especially seeks to ascertain is *laws* of mind or mental facts. A *law* of mental facts is a general truth about mental facts—something which will be true not only in all your experience under similar circumstances, but in the experience of all people under similar circumstances. We have just been considering an example of a law of mental facts— that intense feeling, whether of pleasure or pain, cannot exist along with concentration of mind on another subject. We may then define Psychology as the science which seeks to ascertain mental facts and the laws which govern them.

If you understand what a mental fact is you will see, of course, that you can study them not only in yourself, but in other people, and if you understand the definition of Psychology you will see that you cannot limit yourself to your own mental facts in studying this subject. Psychology, we have just seen, aims at general knowledge of mind, and if you confine yourself to your own mental facts you cannot be sure that your knowledge is general.

But can you study the mental facts of other people's experiences *in the same way* as you can

your own? Try it and see. As a teacher you often need to know whether your pupils are attending to you or whether they understand you. Can you find out in the same way that you can learn whether or not you are attending? Plainly not; you learn whether or not you are attending simply by *looking within* your own mind. The word which means looking within is introspection, and the adjective, introspective seems to me, therefore, to describe best the way or mode or method in which you study the mental facts of your own experience. But you will never learn anything about the mental facts of other people by means of the introspective method. When you study other people you notice their looks and actions. Many teachers think they can tell whether their pupils are attending to them without asking them questions. They look or act as though they were attending, and so the teachers who believe this conclude they are. *Conclude*, I say. Note the word carefully. It denotes a process of reasoning, and when we study the mental facts of other people's experience we have to do it by processes of reasoning, by acts of inference. It may seem strange to you, but you do not know that there are any other people in the world except by

a process of reasoning. When you say you see a man, you mean or would mean if you had in mind the exact truth, that you have sensations of color, and from this infer the presence of a human being, like yourself. And when you see this human being laugh you infer that he experiences the mental fact called amusement, just as you are conscious of doing when you laugh. All that you learn of any human being you learn by reasoning — by inference. As, then, we called the method of studying our own minds the introspective method, since we study them by looking directly within, so we may call the method of studying the mental facts of others the *inferential*, since we do it by processes of inference.

And whatever you learn about other people's minds, whether you learn it from what you see them do or what you read of them, you learn by means of the inferential method. When you learn how Washington exposed himself when Braddock's army was routed and at the battle of Princeton, you infer that he was brave precisely as you would if you had seen him.

I have said that the introspective method is the method we use in studying our own mental

facts; that needs qualification. It is possible for us to study our own mental facts by means of the inferential method. Were you ever unable to remember your motive for doing a certain thing? People often are. They say, "I do not know how I came to do that" In such cases, you can not learn your motive by the introspective method. You must learn it, if you learn it at all, by the inferential method, by reasoning out the motive that induced you to act as you did.

The introspective and inferential methods then are the two methods of studying mental facts. You can use the introspective method without the inferential, but you can not use the inferential without the introspective. When you infer that people have such and such mental facts under such and such circumstances, it is because you have the same mental facts under similar circumstances. When you infer that a man is amused when he laughs, it is because you know by introspection that you are amused when you laugh. If you had never been amused, the laughter of other people would not suggest the idea that they are amused. And in like manner, if you never had had any experience of sorrow, the tears of other

people would not have any meaning to you. And yet, although the inferential method is based on the introspective method, as we have already seen, we must enlarge our knowledge of mind not only by using the introspective method, but also by using the inferential method. For if we confine our study to our own mental facts, we shall not know whether or not our conclusions are true of the minds of other people; and if they are not, they form no part of Psychology.

Each of these methods, as Mr. Sully points out, has its peculiar difficulties. The results reached by means of the inferential method are always more or less uncertain. If you have ever made a thorough study of the history of any great man you have doubtless had an excellent illustration of this. While different historians generally agree substantially as to the actions of men, they differ very widely in their interpretations of those actions. Federalist historians, and those who sympathize with them, for example, usually regard Jefferson as a demagogue, while Democratic historians regard him as a sincere and devoted patriot. The reason, of course, is that using the inferential method the one explained his actions by one set of

mental facts, the other by another set. The great difficulty with the introspective method is that a mental fact vanishes as soon as you attempt to examine it by introspection. The feeling of amusement, of course, is a mental fact. The next time you are amused suppose you try to analyze the feeling. Some Psychologists say that it consists in part of a feeling of superiority. Suppose you make a study of your experience, in order to see whether they are right. I think if you do, you will find your amusement vanishing. Or suppose you try to see what sort of a mental fact pity is. Some Psychologists hold that it is a state of pleasure. If the next time you find yourself pitying any one, you examine your experience to see what pity is, I think you will find your pity gone. If the nature of flowers were such that they cease to exist the moment one begins to observe them closely, the study of Botany would exactly illustrate the difficulty of studying Psychology by means of the introspective method.

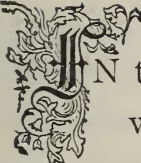
LIST OF QUESTIONS.

1. What kind of mental facts constitutes the science of Psychology?

2. Illustrate your answer.
3. What is a law of mental facts? Illustrate.
4. (a) State, (b) explain, and (c) illustrate the two ways of studying mental facts.
5. Show that you can study your own experience by means of the inferential method.
6. Which of these two methods depends on the other, and why?
7. State the difficulties of the inferential method. Illustrate.
8. State the difficulties of the introspective method. Illustrate.

LESSON V.

WHAT ARE WE CONSCIOUS OF?

N the last lesson I tried to explain the two ways, or modes, or methods of studying mental facts. You can study the facts of your own experience directly — by looking within your own mind; you can study the facts of other people's experience — and in some cases of your own — indirectly; that is the whole of it.

Since I wrote the last lesson I have come across such an excellent illustration of the inferential method and of its difficulties that I am sure you will pardon me for quoting it at length. This is the passage: "It is difficult for the civilized man and the savage to understand each other. As a rule, the one does not know what the other is thinking about." And then speaking of Eliot, and what the Indians thought about him, the author, John Fiske, goes on: "His design in founding his villages of Christian Indians was in the highest degree benevolent and noble; but the heathen Indians could hardly be expected to see anything in it but

a cunning scheme for destroying them. Eliot's converts were for the most part from the Massachusetts tribe, the smallest and weakest of all. The Plymouth converts came chiefly from the tribe next in weakness, the Pokanokets or Wampanoags. The more powerful tribes — Narragansetts, Nipmucks, and Mohegans — furnished very few converts. When they saw the white intruders gathering members of the weakest tribes into villages of English type, and teaching them strange gods while clothing them in strange garments, they probably supposed that the pale faces were simply adopting these Indians into their white tribe as a means of increasing their military strength. At any rate, such a proceeding would be perfectly intelligible to the savage mind, whereas the nature of Eliot's design lay quite beyond its ken. As the Indians recovered from their supernatural dread of the English, and began to regard them as using human means to accomplish their ends, they must, of course, interpret their conduct in such light as savage experience could afford. It is one of the commonest things in the world for a savage tribe to absorb weak neighbors by adoption, and thus in-

crease its force preparatory to a deadly assault upon other neighbors.”*

The Indians, of course, were not students of Psychology, and yet the way in which Mr. Fiske supposes them to reason about the motives of the Apostle Eliot is an exact illustration of the inferential method. And precisely as they made a mistake because their experience gave them no clue to his motives, so you and I will be sure to make mistakes when we are reasoning about people whose experience is widely different from ours. For our own experiences, the mental facts of which each of us is conscious, are the only key with which we can unlock the door that separates us from the mental facts of other people. And this, it seems to me, brings out quite clearly a fact to which I have already called your attention, and that is, that the inferential method is based upon the introspective. As the savages thought that Eliot was making converts in order to increase his military strength, because they frequently absorbed weak neighbors for that purpose, so every one not only does but must interpret the actions

*The Beginnings of New England; or the Puritan Theocracy in its Relations to Civil and Religious Liberty. By John Fiske.

of other people by the facts of which he is conscious, the facts which he learns by means of the introspective method. I hope that it is unnecessary for me to repeat that the great reason why it is important for you as teachers to study Psychology, is that you may learn more of the minds of your pupils, and I think you see that the method by means of which you must study them is the inferential. You must observe their actions and conversation, note their likes and dislikes, their amusements, their games, the books they read—everything, in short, that may throw light on their minds, if you would get that knowledge of them that will enable you to teach them well. Do not rely on any knowledge of the mind you can get from this or any other book. Indeed, a good book on Psychology is like a guide in a strange city—useful chiefly in telling you where to look. But as a guide can show nothing to a blind man, so a writer on Psychology can be of little use to his readers unless they persistently verify his statements by a study of their own experiences and by a study of the minds of those around them.

Since the inferential method is based on the introspective, it is exceedingly important for us to

know exactly what we can learn by means of the introspective method. If you were building a house I am sure you would be especially careful about the foundation. You would want it all strong and well made, but I think you would take particular pains to see that there was no flaw in the foundation. No matter how strong and fine and beautiful the rest of the house might be, you would feel that if the foundation was weak, the whole thing might come tumbling down about you any day. Now, if you will think quite carefully, you will see that what you learn by means of the introspective method—what you are conscious of, I mean—is the foundation of nearly everything you know and believe. What you know about History, Geography, Grammar, Arithmetic—everything, in a word, even the commonest facts of every-day life—is based at last for the most part on what you are conscious of. For though the inferential method of which I have been speaking *is only a method of studying mind by inference*, still it is plain that not only the mental facts of other people, but everything else which we are not conscious of we must learn by inference, unless, indeed, there is some other way of

knowing things directly besides consciousness. There are, indeed, some very great men who think that there is. They admit, of course, that all we know, we know either directly or indirectly. But they think that there are two kinds of direct knowledge—conscious or introspective knowledge, and what they call intuitive knowledge. They would represent the matter in this way:

$$\text{Knowledge: } \left\{ \begin{array}{l} \text{direct,} \\ \text{indirect.} \end{array} \right. \left\{ \begin{array}{l} \text{conscious,} \\ \text{intuitive.} \end{array} \right.$$

Hence, before going on, I think I must try to give you some idea of what they mean by intuitive knowledge, although I will tell you frankly that you cannot hope to understand what I or any one else may say in explaining it, unless you are willing to do some very hard thinking.

Let me ask you then if anything can happen without a cause. Certainly not, you will say. "Are you sure of it?"

"Sure of what?"

"That nothing can happen without a cause."

"Certainly I am; I am as sure of it as I am that I live."

"Would you be willing to state it in this way: Everything that happens must have a cause?"

"Yes, to say Nothing can happen without a cause, and Everything that happens must have a cause, mean the same thing."

"And you are *sure* that *everything* that happens must have a cause?"

"Certainly."

"But consider, *everything* means a good many things; it means what happens a very long way off, what happens on the fixed star Sirius and on the remotest star in the universe; it means what happened a long time ago. Are you *certain*, *absolutely* certain that *every* event, no matter where or when, must have a cause?"

"I am as certain, I repeat, as I am that I live."

"But *how* are you certain of it?"

At this point, I think you would stop to think. And if you said that you knew it by reasoning, I think you would take it back when I called your attention to the fact that if you know it by reasoning, you have no business to be so certain of it. Reasoning can not justify you in going so far beyond your experience to the beginning of time and the bounds of space, so to speak. Because all

the events you know of have had causes, a mere process of reasoning can not warrant you in being certain that *every* event *must* have a cause. But no matter how clearly you may come to see that reasoning can never give you the right to be certain that every event must have a cause, you continue to be certain all the same. But if you do not know it by reasoning, you must know it directly. There are but two kinds of knowledge, indirect and direct, and if we know anything which we have not learned indirectly or by a process of reasoning, we must know it directly. Let me restate that: You know that every event must have a cause; you could not have learned it by a process of reasoning, or indirectly; consequently, you must have learned it directly. But what kind of direct knowledge is it? It is an *intuition*, say those great men who believe in intuitive knowledge, *a self-evident truth, and, therefore, known to us without any process of reasoning, although we are not conscious of it.* Here are some more examples of what they call intuitions: Two straight lines can not inclose a space; a straight line is the shortest distance between two points; if equals are added to equals the sums will be equals; if equals are

subtracted from equals, the remainders will be equals; and, indeed, all the axioms of geometry.

I think there are intuitions; in other words, things that we know directly without being conscious of them. But I recommend you not to allow yourself to have any opinion about it until you have studied the matter very thoroughly. You have no business to say that you will believe this or that, in this case, because some one else does, since the great men of the world have thought differently about it. What I have been trying to do is, not to make you believe that there is, or is not, intuitive knowledge, but to explain what is meant by it.

LIST OF QUESTIONS.

1. Give an illustration of the difficulties of the inferential method.

2. Show by means of the illustration that the inferential method is based on the introspective.

3. Which method must you use in studying children, and why is it important for you to study them?

4. What sort of knowledge of mind can you get from the mere study of books?

5. What are the two kinds of direct knowledge?
6. What is intuitive knowledge?
7. Give examples.
8. Do you believe we have intuitive knowledge; and, if so, why?

LESSON VI

WHAT ARE WE CONSCIOUS OF?



IN the last lesson I tried to show you that in the opinion of some thinkers, there are two kinds of direct knowledge — what we are conscious of and intuitions. I explained intuitions as self-evident truths of which we are not conscious, although, since they are self-evident, we know them just as directly as we do of the facts of which we are conscious.

If there are intuitions, they and the facts of which we are conscious constitute the foundation of everything we believe. If there are no intuitions, then these conscious facts by themselves make up the basis of everything we believe. For this reason, as I told you in the last lesson, it is of the utmost importance to find out what we are conscious of. To suppose we are conscious of something which we are not conscious of is like putting into the foundation of a building a piece of inferior material, something which does not belong there at all, and which is perhaps too poor to

put in any part of the building whatever. What then are we conscious of?

To answer this question we must first get as clear an idea as we can of what that kind of knowledge is which we call conscious knowledge. For to ask what we are conscious of, is to ask what we know *in precisely the same way, with the same kind and degree of certainty as we do the facts which every one admits we are conscious of*. When Columbus first came to this country, if he had been told that a lot of animals which he saw were buffaloes, then in order to learn what other animals were buffaloes he would have been obliged to learn what other animals were exactly like the buffaloes he knew in all essential particulars. As we are conscious of those facts which we have agreed to call mental facts, in order to learn whether we are conscious of any other kinds of facts, we plainly have to learn whether we know anything else in the same way, with the same kind and degree of certainty, as we know these facts, which every one admits we are conscious of. What, then, is that kind of knowledge which we call conscious knowledge?

Have you ever been in pain? Suppose that

while you were writhing in agony, some one had asked you if you were sure you had any pain. How do you think you would have answered the question, if, indeed, you had possessed the patience to answer it at all? You would have said, I think, that your certainty was so great that it *could* be no greater. Put so much water into a glass and not another drop—not an *atom* more can you make it hold. So you would have said, certainty beyond or greater than yours it was impossible for any conscious being to have. “But may you not be deceived; may not your pain be a mere illusion, like the experiences of your dreams?” your questioner might have asked. “Deceived as to being in pain, when I am literally writhing in agony? *No!* I know it so absolutely that I know that I *can* not be mistaken. There is much that I believe that I realize I may be mistaken in. But this is *certainty*; certainty that admits no doubt; certainty that makes doubt an absurdity and an impossibility.” Conscious knowledge, then, is absolutely certain knowledge; knowledge so certain as to make doubt an absurdity and an impossibility. Instead, then, of asking whether there are any other kinds of facts except mental facts which

we are conscious of, we can put the question in this form: Is there *anything*, except mental facts, which we know with such absolute certainty that it is impossible to doubt it?

Perhaps while I am writing this lesson, you are taking a walk. As you glance at the stars shining so brightly above you, you think perhaps of the subject of your last lesson, and ask yourself if you really are conscious of them? Do you, as you see those little twinkling points of light in the heavens above you, *know* that they exist, so certainly, so *absolutely*, as to make doubt an impossibility?

You doubtless know that the fixed stars — nearly all of the stars we see — are almost inconceivably far away. They are so far away that astronomers never think of stating their distance from us in miles. Instead of telling us how far they are from us by telling us the number of miles they are distant, they tell us how long it takes light to travel from them to us. Now light travels about 180,000 miles in a *second* and the nearest of the fixed stars is so far away that it takes light *three years* to come from it to us. Suppose, then, that the nearest fixed star had been destroyed two years

and a half ago. Would you see it to-night? Certainly, just as you see any other star, for the light that strikes your eyes as you look at it, left it two years and a half ago—six months before it was destroyed. And for the same reason you would see it to-morrow night, and the next, and so on for six months. Night after night for six months, you would see the star shining above you although it did not exist at all! When, then, I ask if you *know* that the stars exist as you look at them, evidently the most you can say is that they do *unless* they have been destroyed since the light left them by which you now see them. But if that is your answer, you cannot say that you know that they exist so absolutely as to make doubt an impossibility for you do not know that they have not been destroyed since the light left them which enables you to see them. Therefore, you are not conscious of them.

“But at any rate,” perhaps you will say, “I am conscious of the objects about me. I take a walk and I see the beautiful bouquets of autumn adorning the hill sides. I see the fields stretching out before me and here and there a farmer busy at work. As I mark how the leaves of the hedge

were nipped by last night's frost, a rabbit suddenly leaps from under my feet and I wish for my gun as he fairly flies away from me. "Surely," you will say, "you will admit that I am conscious of these things?"

Are you? Put the question to yourself. Ask yourself if you *know* that these things exist so *absolutely* that doubt is an impossibility. Do you like to go hunting? If so, I am sure you have dreamed of standing behind a trusty pointer, gun in hand ready to take the first quail that made its appearance above the weeds. And while you were in the midst of your excitement you awoke perhaps to find that you had neither dog nor gun — to find that you had been hunting only in a dream. What of it, you ask? This: A certainty quite as great as, indeed indistinguishable from, your waking certainties, proved untrustworthy; *may* not your waking certainties be unreliable? You will not, of course, imagine that I doubt that I see and hear the various things which I seem to see and hear, or that I am trying to make you doubt them. I am simply trying to show you that you do not know them with the same absolute certainty that you do the mental facts of your

experience, and that, therefore, you are not conscious of them.

It seems to me there is another point of view from which you may see it even more clearly. What do you, what does any one, know about this universe? Very little indeed. The more powerful we make our telescopes, the bigger the universe seems to be, the more it seems to us there is no end to it. The more powerful we make our microscopes, the more we learn of its infinitesimalness. Just think what poor, weak, ignorant creatures we are, feeling our way out into this infinite universe with our poor minds, and then tell me: Do you *know* that nowhere in this universe does anything exist of sufficient power to make us think we see, hear, smell, touch, and taste objects except objects themselves? I do not, and I do not believe you do.

But these arguments, conclusive as they seem to me to be, are not the considerations which have most weight with me. Simply by looking into my own mind I know that I do not know the existence of the objects about me with the same kind and degree of certainty that I do the mental facts I am conscious of, and that, therefore, I am not conscious of them. If you think you are, permit me to ask

you to consider the force of the arguments I have called your attention to above, and because, of their force, to hold your judgment in suspense until you have had more experience in the study of mental facts. You would take the opinion of a sailor as to the character of a distant object at sea in preference to your own, simply because of his more extended experience. Inasmuch as trained Psychologists, almost without exception, contend that we are not conscious of the objects about us, I ask you to hold your judgment in suspense until you have studied the subject long enough to give you a right to an opinion.

And it seems to me equally clear that we are not conscious of our own bodies. A man with an amputated limb often feels pain in the amputated limb exactly as he does in the limb that is not amputated. But he can not be conscious of the amputated limb. You admit that. You admit that a man can not be conscious of a leg that has been buried for months. Well, if he *seems* to be conscious of the amputated member and is not, *he has no reason to believe that he is conscious of a member that is not amputated because he seems to be.*

Hence I think we may conclude that we know nothing else with the same kind and degree of certainty as we do the facts of which we are conscious; and that, therefore, we are conscious of nothing else.

LIST OF QUESTIONS.

1. What was the object of the last lesson?
2. What is the foundation of all we know and believe?
3. What kind of knowledge have we of our own mental facts?
4. Why do I ask that question?
5. Are you conscious of the stars?
6. Give your reason for your answer.
7. Are you unconscious of the objects about you?
8. Give your reasons for your answers.
9. Are you conscious of your body?

LESSON VII.

ATTENTION.



WE have seen that conscious knowledge is that knowledge which we have of those mental facts which we know directly. I have already told you that there are mental facts of which we are not conscious. You remember the example—a student intent upon a book and not hearing the clock strike till a moment after. What is the explanation of such facts? The attention of the student was so fixed upon his book—his entire consciousness was so concentrated upon it—that there was no consciousness left for the sensation. Thus you see that *the sensations of which we are conscious depend upon attention*. In his Mental Physiology, Carpenter gives some remarkable examples of this. For instance: “Before the introduction of chloroform, patients sometimes went through severe operations without giving any sign of pain and afterwards declared that *they felt none*: having concentrated their thoughts by a powerful effort of abstraction, on some subject which held

them engaged throughout." "The writer has frequently begun a lecture, whilst suffering neuralgic pain so severe as to make him apprehend that he would find it impossible to proceed; yet no sooner has he, by a determined effort, fairly launched himself into the stream of thought, than he has found himself continuously borne along without the least distraction, until the end has come, and the attention has been released; when the pain has recurred with a force that has overmastered all resistance, making him wonder how he could have ever ceased to feel it." A similar experience in the case of Sir Walter Scott is thus recorded by his biographer: "John Ballantyne (whom Scott, while suffering under a prolonged and painful illness employed as his amanuensis) told me that though Scott often turned himself on his pillow with a groan of torment, he usually continued the sentence in the same breath. But when dialogue of peculiar animation was in progress, spirit seemed to triumph altogether over matter—he arose from his couch and walked up and down the room, raising and lowering his voice and, as it were, act-the parts. It was in this fashion that Scott produced the far greater portion of the "Bride of

Lammermoor," the whole of the "Legend of Montrose," and almost the whole of "Ivanhoe."

Also, what we perceive depends upon attention. Let a botanist and geologist take the same walk—and the botanist will see the flowers and the geologist the rocks, simply because each sees what he attends to. The next time you take a walk go along the most familiar road in your neighborhood and see if you can't discover something new to you—some tree or shed that has been there all the time. I have often had that experience. The reason is that these unperceived objects were not attached to.

What we remember depends upon what we attend to. Have you ever thought of it? Most of our past lives is a perfect Sahara of forgetfulness—blank, bleak, barren—swallowed up in oblivion. But here and there gleam little green spots of memory, little oases in the midst of the mighty desert of the past. How is this? The things which we remember are the things which we attend to. Talk to an old man about his past life and you will find that the events of the last year he but dimly remembers; but when he speaks of his boyhood, the incidents of the time crowd

themselves upon him as though they had happened but yesterday. In that far-off happy time, when his heart was light and his mind was free from care, the most trivial events received a degree of attention sufficient to stamp them on his memory forever.

What we recollect depends upon what we attend to. (Recollecting is remembering by an *act of will*. All recollecting is remembering, but all remembering is not recollecting. Recollecting is a *kind* of remembering.) What do you do when you try to recall the name of a friend which has slipped your memory for the moment? You think of—attend to the thought of—how he looks, of his dress, of some peculiarity in his manner, of the first letter of his name, of some place where you saw him—of something connected with him—until, by-and-by, his name flashes into your mind. All you did, you notice, was to attend to certain thoughts in your mind.

What conclusions you reach depend upon what you attend you. To Newton, sitting in his garden, the fall of an apple suggested the law of gravitation. Why? Because he fixed his attention upon the resemblance between the fall of the apple

from the tree and the revolution of the moon around the earth. The chief difference between the man of great reasoning powers and the ordinary man is that the former notices remote resemblances — resemblances that escape the attention of the latter. What we feel depends upon attention. The same author already quoted from, Carpenter, gives some remarkable illustrations of this: The celebrated German mathematician, Gauss, while engaged in one of his most profound investigations, was interrupted by a servant, who told him that his wife (to whom he was known to be deeply attached, and who was suffering from a severe illness) was worse. “He seemed to *hear* what was said, but either he did not comprehend it, or immediately forgot it, and went on with his work. After some little time, the servant came again to say that his mistress was much worse and to beg that he would come to her at once; to which he replied, ‘I will come presently.’ Again he relapsed into his previous train of thought, entirely forgetting the intention he had expressed, most probably without having distinctly realized to himself the import either of the communication or of his answer to it. For not long afterwards when the servant came again and as-

sured him that her mistress was dying, and that if he did not come *immediately*, he would probably not find her alive, he lifted up his head and calmly replied: 'Tell her to wait until I come'—a message he had doubtless often before sent, when pressed by his wife's request for his presence while he was similarly engaged."/>

What we *will* likewise depends upon attention. Suppose a boy has a lesson to get, and another boy invites him to go fishing. Will he go or will he stay and get his lesson? That depends on what he attends to. If he allows his mind to dwell on the fun he will have, if he does not permit himself to think of the consequences of neglecting his work, he will go. But if he keeps his mind firmly fixed on the consequences; if he vividly realizes the displeasure of his parents, the disapprobation of his teacher, the probability of losing his place in his class, he will stay.

This brief survey will enable you to form some idea of the importance of the part which attention plays in our mental life. I think you can see that the chief difference between the educated and the uneducated man is the greater capacity of the former for close, continuous, concentrated atten-

tion. Some writers indeed have gone so far as to say that genius depends entirely on the power to concentrate the attention. Newton thought that the sole difference between himself and ordinary men consisted in his greater power of attention. This, I think, is an exaggeration. But however this may be I think that the importance of training the attention can scarcely be over-estimated.

How can we train the attention of our pupils? Precisely as we cultivate any other power of their minds—by getting them to attend. Our pupils learn to observe by observing, and to think by thinking and to attend by attending. We never make the mistake of assuming that our pupils have a high degree of reasoning power when they first go to school—that they are capable of solving difficult problems in arithmetic, or understanding abstract statements in grammar—and it is just as absurd for us to suppose that they are capable of continuous attention, and yet we are prone to do that. “Because people are attentive, when strong interest is roused” — says Edward Thring — “there is a common idea that attention is natural, and inattention a culpable fault. But the boy’s mind is much like a frolicking puppy, always in motion,


restless, but never in the same position two minutes together, when really awake. Naturally his body partakes of this unsettled character. Attention is a lesson to be learned, and quite as much a matter of training as any other lesson. A teacher will be saved much useless friction if he acknowledges this fact, and instead of expecting attention which he will not get, starts at once with the intention of teaching it." How can he teach it? That question I intend to try to answer in the next lesson.

LIST OF QUESTIONS.

1. Show and illustrate that the sensations of which we are conscious depend upon attention.
2. Show and illustrate that what we perceive depends upon attention.
3. Show and illustrate that what we remember depends upon attention.
4. Show and illustrate that what we recollect depends upon attention.
5. Show and illustrate that what we believe depends upon attention.
6. Show and illustrate that what we feel depends upon attention.
7. Show and illustrate that what we *will* depends upon attention.

LESSON VIII.

ATTENTION.



IN the last lesson, I tried to give you some idea of the overshadowing importance of the part which attention plays in our mental life. I wanted to make you feel that you must get the attention of your pupils or you can not teach them. The world which you know is the world you have attended to; so far as you have not attended to it, it does not exist for you. And in precisely the same way, when your pupils are not attending to you, you do not exist for them; their minds, for the time being, are no more affected by you than if you had never lived.

But what is attention? It is the concentration of mind upon some subject to the exclusion of everything else. When you say to your pupils, Give me your attention, you mean that you want them to stop thinking of the game they played at recess, of the book they read last night, of everything except what you are saying.

Would you expect to get the attention of a

class of little folks by asking for it? Would you try to induce them to study by talking to them about the importance of an education? I don't think you would; you would instinctively feel that it would be of no use. You feel that to get the attention of very young children, you must present to them something which is attractive in and of itself. Why is it that you do not feel the same way in the case of older children? Because, you know that they can give you a different kind of attention; you know that their attention is, to some extent, under the control of their will.

It thus appears that there are two kinds of attention—involuntary and voluntary. In involuntary attention, we attend simply because of the attraction which the subject attended to has for the mind; in voluntary attention, we attend through an exercise of the will. If you want a perfect illustration of the two kinds of attention in your own experience, take a book and try to study the next time some one begins to sing one of your favorite songs in your hearing. By a strong effort of will, you may succeed in putting your mind on your book for a moment, but the attractiveness of

the song will be pretty sure to make it impossible for you to keep it there.

You will see the difference between them more clearly perhaps, if you realize that in the case of involuntary attention there is but one thing that influences the mind, and that is the thing attended to ; while in voluntary attention, there are two, the thing attended to, and some reason or motive we have for attending it. When you listen to a song simply because you like it, you attend involuntarily ; when you study a lesson by an effort of will, you attend voluntarily. In the former case there were but two things concerned, the mind and the song ; in the latter, there were three, the mind and the book and some reason you have for attending to it, such as the desire to improve.

In the early part of our mental life, we are not capable of voluntary attention. We attend to this or that because it pleases us or gives us pain, because of its direct relation to our pleasure or pain. The power of involuntary attention grows by exercise. Less interesting and less attractive things get the power to draw our attention ; things uninteresting in themselves, begin to be interesting because of their relation to interesting things, and with this

begins the exercise of voluntary attention. When a child begins to take an interest in the preparations for his bath, he is very near the period when he can be induced to do this or that by the promise of a bath, and this influence of motives is exerted only in voluntary attention.

But it should be carefully noted that when we acquire the power to attend voluntarily, we can not attend to anything for any length of time simply by an effort of will. By an act of the will, we determine the direction in which the mind will look; whether it will continue to look that way, depends on whether it sees anything interesting. Sully puts this very clearly: "By an act of will, I may resolve to turn my attention to something, say a passage in a book. But if after this preliminary process of adjustment of the mental eye, the object opens up no interesting phase, all the willing in the world will not produce a calm, settled state of concentration. The will introduces mind and object; it cannot force an attachment between them. No compulsion of attention ever succeeded in making a young mind cordially embrace and appropriate by an act of concentration an unsuitable and, therefore, uninteresting sub-

ject. We thus see that voluntary attention is not removed from the sway of interest. What it does is to determine the kind of interest which shall prevail at the moment." In other words, all that the will does is to *put* the mind on a particular subject; if it stays there it is because the subject attracts it. The will introduces the mind to the subject. But it will not converse with its new acquaintance for any length of time, unless it finds it interesting.

And now you see why it is of such importance for you to interest your pupils. Unless you interest them, they *cannot* give you continuous attention, and unless they attend to you, you might as well talk to their overcoats, to use one of Thring's illustrations, while their owners are playing ball.

The great secret of interest is adaptation. Find out what your pupils like. Study them at play. See how they employ themselves when they can do what they please, and when you have found what they like you can interest them. You see them building houses in the sand; take a hint from that and set them to moulding in sand the shapes of the various countries of the world. Do not wait until they have begun to study Geography in a

systematic way. You can utilize their fondness for playing in the sand in fixing in their minds the shapes of the countries you will begin to teach them about later. You see them looking at pictures. Encourage them to do it. Give them pictures to look at which will serve some educational purpose. Perhaps you have had them mould the continent of South America; show them pictures of its cities, of the people of the various countries. Tell them the names of the pictures; as, this is Rio Janeiro, these are Peruvians. Children like to listen to stories. Tell them stories about Pizarro, and how he treated the Incas. I need not take the time to tell you how can turn their fondness for drawing, and for telling what they know, to account in similar ways. I am simply illustrating how you can teach them by adapting your instruction to them. Study them *closely, carefully, constantly*. Notice that they do not like to do anything long at a time, and vary your teaching accordingly.

In such ways you can interest young children by getting them to do what they like to do, and you not only interest them, you teach them. You can get them to exercise their observing powers, and lay the foundation of a lasting interest in the

birds and trees and flowers that are to be found in their neighborhood. The time so spent is an investment which will yield them a rich return in after days.

No matter what grade of pupils you are dealing with, the secret of successful teaching still is adaptation. Have you ever noticed what life an energetic, lively boy can put in a dull game? His interest and energy and enthusiasm are contagious. You can see examples of that everywhere. Go to an evening party and see sometimes how industriously every one is engaged in studying the figures of the carpet, and how all this changes when some one who is called *the life of the company* comes. Life of the company! That is a very significant expression. Remember how Sheridan put life into his retreating army at Winchester, so that they turned about and beat back a triumphantly advancing enemy. You can put life into your classes if you choose. You can bring to your recitations such an intensity of interest in your subject that the dull-est boy in your class will feel the glow of your enthusiasm. I know very well that such enthusiasm is a gift of nature vouchsafed to but few teachers. But there is a degree of interest within the reach

of everyone of us if we are willing to work for it. And it requires work. There is no danger of a lack of interest in our subjects if we study. And if you think you know so much about what you teach that it is not worth while for you to study it any more, that very fact proves that you are lacking in interest. But interest in your work is as essential to success in teaching as knowledge.

For the cultivation of interest, I think what an English writer calls "freshness of mind" is of great importance. "To find the lesson oozing," he says, "as it were from your finger tips, to be so full of your subject that the question is not what to say, but what to leave out, and to feel so well and vigorous that your vivacity compels attention and interest, and makes the faces in front of you look bright contagiously *that* is to how prepare the lesson..... The story (told by the Professor at the breakfast table, I think), of a tailor lamenting over a customer departing empty handed, 'that if it were not for a headache he would have a new coat on that back in spite of himself' is freighted with truth. There is a magnetic influence passing from a healthy and alert mind to all with whom it comes into contact; that influence is the teacher's

conjuring wand, and without it he will never bring the dry bones of education to life. It will readily be seen that no patent process for the production or maintenance of this influence can be found. It is best fostered by variety of life, by a wide experience of men and things (not at all an easy thing for one so closely tied as a teacher to attain), in short by anything that tends to keep the heart and mind open and to make life interesting. Teachers lead too often very dull lives and the dullness reacts on their pupils. Men and women who have to give out so much can hardly lead too full and rich and interesting lives. Their minds ought to be a store-house of thoughts and pictures and recollections, from which they can draw at will to enrich their lessons and to furnish the minds of their pupils."


LIST OF QUESTIONS.

1. Define attention.
2. Explain the two kinds of attention.
3. Illustrate the difference between them.
4. Show that we cannot attend long merely by an effort of will.
5. How would you interest primary pupils?

6. How would you try to interest yourself?
7. What is freshness of mind?
8. What can you do to get it?

LESSON IX.

ATTENTION.

N the last lesson, I said that there are two kinds of attention — involuntary and voluntary; that we attend involuntarily when the subject attended to attracts us in and of itself; voluntarily when we perceive the relation which the thing attended to has to some subject of intrinsic interest. In other words, in involuntary attention, the thing attended to is the sole cause of attention; in voluntary attention the thing attended to is not the source of attraction, but something else is; and we attend to the thing, not for its own sake, but for the sake of that something else. I also pointed out the fact that if voluntary attention is to be of much intellectual value, it must pave the way for involuntary attention. If the will resolutely turns the gaze of the mind upon a certain subject, points of interest may present themselves, before unnoticed, so that voluntary attention may become involuntary. As the persuasions of a friend may induce you to consent to

be introduced to a person who does not attract you and whom you think you will not like, so the exertion of the will may induce you to attend to what you otherwise would not have attended to, because it possessed no attractions to such superficial glances as, without interest, are alone given, except in voluntary attention. And precisely as your new acquaintance may develop elements of attractiveness which you would have never known anything about if you had not consented to an introduction, so an uninteresting subject may become interesting, under the searching gaze of voluntary attention, which otherwise would have remained uninteresting forever. There are, then, two functions of voluntary attention: (1), to develop interests, to make us acquainted with interesting subjects which otherwise we should have remained ignorant of; (2), to give steadiness to the mind, to prevent it from going capriciously here and there under the influence of the interests that happen to be present at the particular moment.

When we had reached this point of view, we were able to see why it is so important for us to interest our pupils. Interest is the source of involuntary attention, and voluntary attention, to be

of much educational value must pass into involuntary attention.

When I said that the great secret of successful teaching consists in adaptation, it was only another way of repeating that successful teaching consists in supplying the conditions of mental activity. The mind has a variety of impulses. Our business is to put it in such a position that we can use those impulses to serve educational ends. Read the last lesson again carefully, and I think you will see that all the methods of adaptation which I suggested are means of using the impulses of our pupils to serve educational ends. That is the reason why I urged you to make such a careful study of your pupils—indeed of children generally. You need to be even on the alert to discover some impulse which you can turn to account.

You know, of course, that you can keep the attention of your pupils better by asking them questions, than you can by doing all the talking yourself. When you are asking them questions, you are making the utmost use of the impulses of curiosity and activity. Children—little and big—like to learn things, and they like to act. Ask the right kind of questions, and you make them con-

scious of their ignorance, you stimulate their curiosity. But here, again, the necessity of studying the minds of your pupils presents itself. The curiosity of little children is very different from that of older pupils. A child asks a question, and before you have answered it he asks another about an entirely different thing. The only attention he can give is involuntary attention. His interest in things in the form of curiosity is very slight, and so, like an active bird, he flits from this subject to that, never staying with one thing a minute at a time. But this, as Thring said, is one of the things which you want to teach—this power of attention. And you will try to help him to attend more and more closely to the subject, and to acquire more and more power to follow out a line of thought. When he asks a second question before you have answered the first, you will neither show nor feel impatience—no more than the mother does that her child is born without teeth. You will ask him questions about the first thing—keeping his mind there as long as you think it safe, learning a lesson from the bird who does not encourage her young ones to make long flights the first time, contented with a little to-day, a little

more to-morrow, until, in the maturity of its powers, it can equal the mother bird. Realizing the feebleness of the curiosity of children, you will not expect from it any sustained efforts. You will be satisfied if you can make it a means of getting them to think a little, and learn a little, being sure that in this way you can lay the foundation for a deeper curiosity, and with this impulse to work with, you can get them to think more closely and acquire more knowledge.

When you are dealing with older pupils you should make a different use of the principle of curiosity. If they have been well taught, it will be deeper; it will be strong enough to stimulate them to more laborious efforts. You can get their attention by asking questions which they can not answer, questions which will make them conscious of ignorance—of which they were unconscious before. *When* you should answer the question, your own tact must determine. It often happens that a student has interest enough in a subject to be clearly conscious of the labyrinth of difficulties in which the questions of his teacher have involved him, but not enough to make him willing to undergo the labor of threading his way out. Now,

while you ought not to remove difficulties that have not been realized, or which the pupil's interest might induce him to overcome, there are circumstances under which the clearing up of difficulties may greatly increase the pupil's interest, and thus put him in the way of a more vigorous and protracted exertion of his powers. When the subject under consideration lies before his mind, wrapped in a fog, a few direct, luminous, incisive statements from you, like a brisk wind, may clear away the fog and reveal the outlines of the country, sharp and clear to your pupil's mind.

You may thus give to him that experience that can be felt but can not be described; that delightful consciousness of power which he realizes when, instead of groping in darkness in an unknown country, he finds himself at home, as it were, with the noonday sun to guide his footsteps. His feeling of weakness gives place to a feeling of power. Instead of feeling himself overborne and beaten back by a superior force, he is victor, and his enemies are flying, or, rather, annihilated before him. This delightful experience, this stepping from darkness into light, this transition from mental chaos and anarchy into a region of order

and law, is your pupil's right, and becomes an exceedingly powerful stimulus.

So far, I have been talking, for the most part, about how to awaken an interest—the condition of involuntary attention; but you should know how to get the voluntary attention of your pupils. M. Breal gives an excellent statement of some of the conditions of voluntary attention:

“So far as possible, the teacher should keep his position, holding the class under his eyes and requiring that all eyes should be turned toward him. The instruction is not to begin until all the children have taken an erect and composed attitude. A rap on the table or a word agreed upon is the signal that the recitation is to begin. The questions should be addressed to the class as a whole; and so the teacher will always first ask the question, and then will allow the pause necessary for finding the reply; and only then will he name the pupil who is to reply. If the pupil begins by trying to find the reply after he has been called on, it is a proof of inattention. If the response made by a pupil is correct, it may be demanded again of a fellow-pupil. If it is faulty, it should be corrected by him. The important parts of the

lesson are repeated in concert by the whole class. As soon as inattention appears, the teacher stops, an excellent means of reanimating the class, but a means which should not be abused is to call up the class and reseat it at a word of command."

Try, also, to commend the subject you are teaching to your pupils. Try to make them realize its importance. Many a boy* pays no attention to your explanations because he does not believe they amount to anything. The best way to meet this difficulty is to be sure that what you have to say is worth listening to, and when you are in doubt about it hold your peace. Be sure, also, that your pupils understand you. When you give an explanation call on some member of the class to repeat it. The knowledge that some one of them may be called on, will make them all listen more closely, and only by hearing them attempt to reproduce your explanation can you be sure that they understand you. And when you have done your best in these and all other directions to get their attention and still have failed, do not get angry, but be *sure* that somehow you have failed to do what might have been done, and use the first opportunity to

make a thorough study of the matter to see if you can find what the difficulty is.

LIST OF QUESTIONS.

1. I say that voluntary attention ought to pave the way for involuntary attention: What do I mean by that?

2. Why can you keep the attention of a class better by asking them questions?

3. Describe the curiosity of children.

4. Give illustrations from your own observation.

5. How would you deepen their curiosity?


6. Do you sometimes ask older pupils questions which you do not immediately answer?

7. How do you determine when it is best to answer them?

8. Mention some conditions of voluntary attention.

LESSON X.

KNOWING, FEELING AND WILLING.



SOME writers on Psychology say that there are three great divisions or departments of the mind: the intellect, the sensibility, and the will. By the intellect, they mean the mind as possessing and exercising the power to know; by the sensibility, the mind as possessing and exercising the power to feel; by the will, the mind as possessing and exercising the power to will. But, as we have agreed in our definition of Psychology to confine our attention to mental facts, instead of using the terms intellect, sensibility, and will, I shall speak of knowing, feeling, and willing—the same things under different names.

The meaning of these terms will be plain, I think, without much explanation. When you see, hear, smell, touch, or taste anything, when you remember anything, when you reason out a conclusion, you are said to know it. Inasmuch as all mental facts whatever are classed as knowing,

feeling, or willing, we put some facts in the first class which at first sight would not seem to belong there. What we imagine, for example, is sometimes true and sometimes false; the same is true of our beliefs, and, of course, of our reasonings also. And yet the imaginations and beliefs and reasonings which are not true are all classed as states of knowing. Why? Because, as *mental facts*, there is no difference between the act of reasoning that leads to a true conclusion and one that leads to a false conclusion; and the same is true of false beliefs, whether produced by reasoning or not, and also of those acts of the imagination which are not in harmony with real things.

When we come to discuss imagination and reasoning, I will illustrate this; but I think you can understand it now without illustration, if you will consider it carefully.

Feeling is the general term for any pleasurable or painful state of consciousness. No matter how the pleasure or pain is produced, whether through the senses, as an agreeable or disagreeable odor, or a pleasant or unpleasant sight, or a pleasing melody or a harsh sound; or through what is sometimes called the higher powers of the mind,

as the pleasures of memory or hope, or the pain of disappointment or failure, it is in any case called feeling.

Willing cannot be defined. But the thing itself is perfectly well known to all of you who understand what voluntary attention is. When you try to put your mind on your book while some one within your hearing is talking about something that interests you, you are exercising your will. When you are lying in bed on a cold morning you often think about getting up some time before you do it. As long as you merely think about it, you lie there, but when you *will* to do it, you get up, although the act of willing is not getting up—it is rather that mental act which directly preceded and caused that series of physical facts which we call getting up.

There is never a moment when you are awake in which you are not exercising your power to know. Generally, also, you have some state of feeling, more or less distinct, and that state of feeling generally causes the will to act more or less energetically.

But, although you are generally knowing and feeling and willing at the same time, you cannot

know intensely and feel or will intensely at the same time, or feel intensely, and know or will intensely at the same time, or will intensely and know or feel intensely at the same time.

Some of the illustrations I gave you of the effects of attention will serve to illustrate this law of the mind also. When Carpenter was engaged in lecturing he forgot his pain. Why? Because pain is a feeling, and when he was lecturing he was exercising his powers to know very vigorously. A mad man is an insane man—one whose knowing powers are disarranged. Why is it that we sometimes call an angry man mad? Because anger is a state of intense feeling, and a man in such a state often does as foolish things as though he were insane. The expression, "wild with grief," has a similar significance, illustrates the same law. You have noticed, also, that you do not succeed very well with those studies which have so little interest for you as to make it necessary for you to put forth a great deal of effort to keep your mind on them. Why? Because you have to will so energetically to keep your mind on them that there is little energy left for knowing.

The practical rules which are based upon this

law are so evident to you already that I need not enlarge on them. You know very well that when your pupils are amused they are not likely to study much. The reason is, that amusement, a pleasurable feeling, is a hindrance to that concentration of mind which we call study — knowing.

The law which I have been illustrating is called the *opposition* or *antagonism* of knowing, feeling, and willing.

Notwithstanding this opposition there is an interdependence of knowing, feeling and willing. When you hurt your hand — feeling — you know that you hurt it, and you try to relieve the pain — willing. Sometimes you have what you call the “blues,” you feel depressed without knowing why. Apart from that case and bodily pleasures and pains I think that you can see that all feeling depends upon knowing. What angers you or grieves you? Something you know. When your so-called friends backbite you it does not affect you until you know it; the misfortune that overtakes your absent friends does not trouble you until the news has reached you. The dependence of knowing or feeling, I have illustrated at great length in the lesson on attention. I tried to show you there

how necessary interest is to attention — and that is only another way of stating the dependence of knowing, so far as it results from involuntary attention, upon feeling. The facts of voluntary attention again illustrate the dependence of the will on feeling. I will to do this or that because of some pleasure or benefit — and that when analyzed will be found to consist of some form of pleasure — which I hope to gain, or of some pain which I hope to shun.

This fact of the interdependence of knowing, feeling and willing is of cardinal importance to the teacher. Teachers are coming to feel the importance of knowing the contents of their pupils' minds in order that they may adapt their teaching to them. To go from the known to the unknown, is to make what the pupil knows a starting point from which to lead him to something he does not know. Plainly any attempt to explain the unknown will be a failure unless the explanation is made in terms known to the pupil. For this reason, intelligent teachers are always trying to make a map of their pupils' minds, as it were, that they may learn what points they can help their pupils to start from in making excursions into the unknown

But there is another fact just as important which teachers are more likely to overlook. When you have arranged an excursion there is something else you must do before you can be sure it will be a success — you must see to it that people have a sufficient motive to go on it. So also when you have planned a mental excursion for your pupils, when you have found a place which they can start from, before you can be sure of their company, you must be sure that they have a sufficient motive for going with you. Dropping the figure, it is not enough for you to explain things so that your pupils *can* understand you, you must see to it that they have a motive to make the necessary exertion. What wind is to a sailing-vessel, and water to a water-mill, and steam to a steam engine — that motives — feelings of some sort — are to all intellectual activity. It is not enough to build railroads and cars and steam-engines — coal must be mined and water must be converted into steam or the cars will never leave the depot.

The clear perception of this truth and of the enormous difference in the educational value of the motives which you may make use of will give you a new test for determining the excellence of a

school. You go into a school; the order is perfect, the recitations well prepared. You say, that's a good school. Not so fast. Don't make up your mind about that until you have learned what motives the teacher appealed to to get these results. Were the pupils quiet through fear? Then the school is not a good school, because the wrong motives are appealed to. Do they learn their lessons to avoid punishment, or as a result of emulation? Then again I say it is not a good school. Good teaching appeals to motives that will operate not merely at school but through life. How long will the fear of punishment induce pupils to study? As long as there is a teacher to inflict punishment. How long will emulation influence them? As long as they have fellow-pupils to emulate. It is not indeed enough to make your instruction interesting. Volkman well says that the precept of modern Pedagogy is, "Instruct in such a way that an interest may awake and remain active for life."*

LIST OF QUESTIONS.

1. Define intellect, sensibility and will.

* Quoted by Sully.

2. What is meant by knowing, feeling and willing?

3. Why are erroneous reasonings classed as knowing?

4. What is meant by the opposition or antagonism of knowing, feeling and willing?

5. Illustrate it as far as you can from your own observation and experience.

6. What is meant by the interdependence of knowing, feeling and willing?

7. Illustrate that from your own observation and experience.

8. What is the test of a good school?

LESSON XI.

SENSATION AND PERCEPTION.



IN the last lesson, we saw that there are three great classes of mental facts, knowing, feeling and willing.

As all knowledge takes its rise in sensation, in discussing the knowing side of the mind, we naturally begin with that.

What is a sensation? If a child taps a drum in your presence you have a sensation of sound. By tapping the drum he set the air in motion. The vibrating air coming into contact with the end of your auditory nerve, caused a change in it — some form of motion — and this caused a change in the adjacent particles and so on until the brain was reached when a change in it was followed by a mental fact which we call sensation. Every link in the chain, you will note, except the last one, is a physical fact—tapping of the drum, vibrating air, change in the nerve, change in the brain—these are all physical facts. All other sensations in like manner are preceded by a series of physical facts.

Rays of light come into contact with or stimulate the optic nerve and cause a change in it, and this in the adjacent particles and so on until the brain is reached and change in it is followed by a sensation of sight. Put your hand on an object, and a change takes place in the particles in the end of the nerves of touch of your hand, and a similar succession of physical facts terminate in sensation.

If now I ask you to give me examples of sensation, you will be likely to say that the hearing of a drum, and the seeing of any object are examples of sensation—but they are not. Run over again that series of physical facts which result from the tapping of the drum—vibrating air, changes in the auditory nerve, change in the brain—and see if you cannot distinguish between the next link, the sensation, and the hearing of the drum. If you beat a drum in the presence of a new born babe do you think he will hear it? No, *he will have a sensation of sound but he will not hear the drum.* We may have sensations of sound and not hear anything, sensations of color, and not see anything, sensations of smell and not smell anything, sensations of touch and not touch anything, sensations of taste and not taste anything.

What do you mean when you say you see an apple? You mean, among other things, that you see a round object, good to eat, and with a pleasant odor when brought near the nose. Do you *see* its odor? Plainly, not; you learn the odor of things through the sense of smell. Do you *see* its taste? Again, no; you learn the taste of things through the sense of taste. Do you *see* its roundness? No; you learn the shape of things by the sense of touch and the muscular sense. How, then, are you able to know by sight alone that an object before you has a certain shape and taste and odor?

In order to answer that question, suppose you ask yourself what a man would know of an apple who saw one for the first time, and who had never heard of one before. He would know its shape, but he would know nothing of its odor and taste. Now, if he tastes and smells the apple, the next time he sees an object resembling it closely in *looks*, it will be likely to occur to him that it resembles it in taste and smell also; in other words, that it is an apple. In other words, its color will be likely to suggest its taste and odor.

If you will think of it carefully, I think you

will see a difference between the experience of color which you have when you are looking at an apple and the thoughts of odor and taste which it suggests. *The experience of color is a present sensation; the thoughts of odor and taste which it suggests are recollections of past sensations of taste and smell.*

If this is clear, I think you can now understand the definition of sensation. A sensation is that *simple* mental fact which *directly* follows the last change in the brain in consequence of the stimulation of an incarrying nerve. (I mean by incarrying nerve, one that proceeds from the outside of the body to the brain.)

Note carefully the italicized words. I say "*directly* follows." Fix that firmly in mind and you will not confuse the sensation *with what it suggests*. The color of an apple suggests its taste and odor, but until you actually taste and smell it, its taste and smell are not sensations, because they do not directly follow the last change in the brain resulting from the stimulation of an incarrying nerve. The only thing that directly follows the last change in the brain is the sensation of color; the thought of the taste and smell of the apple are

the result of the sensation, so that this change in the brain makes you think of its color and taste *through* the sensation, or *indirectly*.

If you bear in mind the significance of the word "simple" it will help to save you from the same mistake. When you are seeing, hearing, touching and tasting things your experience is not simple. You have a sensation, and with it, the recollection of sensations which it suggests.

Note carefully also that a sensation is a *mental* fact. In the third lesson you will remember that I defined a mental fact as one known or knowable to but one person directly and that the person experiencing it, while a physical fact is one that may be known to any number of persons. Now, as I have said already, the facts which immediately precede a sensation are physical facts. Take the case we have already considered, a sensation of sound, caused by the beating of a drum. The beating of a drum is a physical fact, since any number of people can see it at the same time, and although you cannot say so much of the vibrating air, the reason is *not because of the nature of the fact but because of defects in our senses*. If our senses were more acute, a large number of people might feel

the vibrations of air that result from the beating of a drum, and hence it is a physical fact. Of course, no one has ever seen the changes in the auditory nerve that result from the vibrations of the air, because, in the first place, the nerve itself can not be seen; and, in the second place, if it could, its particles are so exceedingly small that no changes in them could be seen. But here again the reason is not because *of the nature of the fact*, but *of the conditions* under which it exists, and of defects in our sense organs. Plainly, the same is true of the changes in the brain, which, like those in the auditory nerve, are physical facts. But directly after those changes in the brain, perhaps, indeed contemporaneous with them — a fact occurs utterly unlike the series of facts which preceded it, a fact which, because of its very nature, is knowable only to the person experiencing it, and that fact is the sensation.

If you clearly realize the difference between sensations and what they suggest, I think you can see how we may have a sensation of sight and not see the object. If you are walking along a road with your eyes open the various objects within the range of your vision will produce in you sensa-

tions of sight. Will you see them? I think it is now clear to you that that depends on whether these objects suggest the recollection of past sensations. But we saw in the lessons on attention that what we recollect or remember depends on what we attend to. When, therefore, you are busily thinking about some problem in arithmetic the chances are that you will see very few of the objects that give you sensations of sight.

You remember perhaps that I told you in the same lesson that the sensations of which we are conscious depend to some extent on attention. In order to be conscious of a sensation we must know it as a sensation of taste, or smell, or touch and so on. But before we can classify a sensation, before we can say this is a sensation of smell, it must suggest to the mind similar sensations, and as what we remember depends upon attention, the sensations to which we do not attend may not suggest similar sensations and so may not be known.

Perception is that act of the mind which we describe as gaining knowledge through the senses. When we see, hear, smell or taste objects we are said to perceive them.

But what do we do when we perceive? In other words, what takes place in the mind when we perceive? That is a difficult question which I will try to answer in the next lesson.

LIST OF QUESTIONS.

1. Why is sensation the subject of the lesson?
2. What is a physical fact?
3. Give examples of the series of physical facts that precede sensation.
4. Illustrate at length what you mean when you say you see an object.
5. What would a man know of an apple who saw it for the first time.
6. Define sensation.
7. Why do I say "*directly* follows?"
8. Why do I say it is a *simple* mental fact?

LESSON XII.

SENSATION AND PERCEPTION.



IN the last lesson we saw that a sensation is that simple mental state which directly follows the last change in the brain which results from the stimulation of an incarrying nerve. Perception I defined provisionally, as gaining knowledge through the senses. But what do the senses tell us of objects? To answer that question is to go a long way toward answering the question which I raised at the close of the last lesson — what takes place in the mind when we perceive?

Put an apple on your table, and sit far enough away from it to prevent it from affecting any sense but the sense of sight. What do you learn about it through the sense of sight? Merely its color. But what is color? A quality of objects, you will say, in this case of the apple. But is not this quality of objects, this color of the apple, *simply* a sensation, a state of your mind? However strange it may seem to think so, you will see that you must admit it, if you bear in mind what a sensation is.

A sensation, we have seen, is that simple mental state which directly follows the last change in the brain which results from the stimulation of an incarrying nerve. Is any nerve stimulated in this case? Yes, the optic nerve. The waves of light strike the retina of the eye and cause a change in it, and this in the adjacent particles of the optic nerve, and these in the particles next to them, and so until the brain is reached, and then — what happens then? Why, according to our definition, the simple mental state that directly follows is a sensation — in this case a sensation of color.

Close your eyes now and request a friend to bring the apple near enough to you to enable you to smell it. What does the sense of smell tell you about it? Simply its odor. But what is odor? A quality of objects, you will say, in this case, of the apple. But again I ask, is not this quality *simply* a sensation, a state of your mind? If you followed the reasoning of the last paragraph, it will be unnecessary to repeat it here. You will see that there is in this case, also, a stimulation of an incarrying nerve — the olfactory nerve — causing a change in the brain and followed by a sensation of smell.

If you will stop up your nose as well as close

your eyes and put your hand upon the apple, you can see what the sense of touch will tell you about it; it will tell you how it feels, its smoothness or roughness; but I think you see that this smoothness or roughness is only a name which you have given to your sensation.

If this reasoning is correct, it is evident that *all that the senses tell us of objects is the sensations they produce in our minds*. If, then, perceiving is gaining a knowledge of objects through the senses, inasmuch as all that the senses tell us of objects is the sensations they produce in us, all that we know of objects when we perceive them is these sensations.

I am quite certain that you will feel very much opposed to accepting this conclusion. All your life you have been accustomed to think of your senses as telling you about objects, and you can not easily bring yourself to believe that they tell you *nothing at all* of objects, but only *how objects affect you*. But what is science but a correction of our ordinary opinions? Chemistry tells you that the drop of dew which glistens on a blade of grass contains millions of particles of water; astronomy, that the sun does not *really* rise and

set at all, but that it seems to do so, because the earth is revolving on its axis with almost inconceivable rapidity. Will you refuse to believe these things because they contradict our ordinary notions? No, you will say; if the reasoning that leads to such conclusions is sound, I will assent to them, however hard it may be to do so.

That is precisely what I ask you to do in the case we are discussing. *Can* the sense of sight tell us anything about objects but their color; the sense of taste, anything but their taste; the sense of smell, anything but their odor; the sense of hearing, anything but their sound; the sense of touch, anything but their feeling? The more carefully you think about it, the more clearly you will see that they can not. *Are* the color, taste, smell, and odor of objects anything but sensations? If there is no flaw in the reasoning, I think we must say that they are not.

When we perceive, then, we simply know the sensations which objects excite in our minds. But, after all, is that a description of what takes place in the mind when we perceive?

We saw in the last lesson that to have a sensation of sound is one thing, to hear an object an-

other; that to have a sensation of sight is one thing, to see an object another — and so on. What does the mind do to its sensations of color and smell and taste in order to perceive colors, odors and tastes as qualities of objects? One thing it does is to group them together — does it not? When you look at an apple, you group its color, taste and smell together as qualities of one object. Sully puts it as follows: "Sense-impressions" — he means sensations — "are the alphabet by which we spell out the objects presented to us. In order to grasp or apprehend these objects, these letters must be put together after the manner of words. Thus, the apprehension of an apple by the eye involves the putting together of various sensations of sight, touch and taste. This is the mind's own work and is known as perception." He compares sensation to the letters of the alphabet, and precisely as in reading we put the letters b, r, i, c, k, together and read "brick" so in perceiving we put together certain sensations and so gain a knowledge of objects.

But this grouping of sensations together is not all you do when you perceive. As long as your sensations *seem* to be sensations, you do not

perceive. You perceive only when they *seem* to you to be what we have seen they are not — qualities actually forming a part of the objects in the world about us.

To perceive, then, is to group sensations together, and to regard them as qualities of the external world.

And now I think you can see why it seemed so hard for you to realize that you are not conscious of the objects about you. The colors, and odors, and tastes of objects which you find it so hard to believe you are not conscious of, you *are* conscious of. But they are not parts of objects at all; they are mental facts — states of your own mind. I have repeatedly called your attention to the broad difference between mental facts such as sensations — which are known directly only to the person experiencing them — and physical facts which are open to the observation of all men. The very color of the apple which you see, you think your neighbor sees also; but you are mistaken, the color of the apple to you is one sensation, and to him another. They may be the same in the sense of being exactly like each other — though that will be the case only when your eyes are exactly

similar and when you see them from the same point of view — in no other.

I said that when we perceive an object we group *sensations* together. To be entirely accurate, that needs a little modification. I tried to show you in the last lesson that when you are looking at an apple your experience of color is a sensation, while the thoughts of odor and taste which it suggests are ideas of sensations experienced in the past. Strictly speaking, then, what we do when we perceive is to make a group consisting of one or more sensations, and ideas of sensations, all of which we regard as qualities of an external object.

The state of mind that results from the act of perception is a percept. Be careful not to confuse this with image. While you are looking at an apple, your state of mind is a percept. If you turn your head and think about it, that picture which you form of it is an image.


In order to reach a percept the mind must take three steps: (1), It must be conscious of a sensation; (2), it must group this sensation with images of sensations already experienced; and (3), it must think of these sensations as qualities of objects.

LIST OF QUESTIONS.

1. Give examples of sensation.
2. Give a provisional definition of perception.
3. Show by examples of your own what the senses tell you of objects.
4. Show that the qualities of objects are sensations.
5. What we do when we perceive?
6. State and explain Sully's comparison.
7. Explain why you have found it so hard to believe that you are not conscious of objects.
8. Give an entirely accurate definition of perception.
9. What is a percept?
10. What are the elements of a percept?

LESSON XIII.

SENSATION AND PERCEPTION—THE CULTIVATION
OF THE OBSERVING POWERS.

N the eleventh lesson, I said that all knowledge takes its rise in sensation. The mental history of every human being begins with its first sensation. Before the first sensation, the only difference between a human being and any other growing thing—for instance, a tree—so far as mind is concerned — consists simply in the fact that the former possesses the potentiality of mind. And this potentiality first begins to become actuality when the human being begins to experience sensations. Be careful to note that although I have said that knowledge takes its rise in sensation, I have not said that the first experience of sensations constitutes the beginning of knowledge. Far from it. If you will consider what knowledge is, you will see that in the very nature of the case the mind must have sensations before it knows it has them. I do not mean what one would mean

if he said that a man must have money before he can know that he has it. That is only another way of saying that in order that a fact may be known, it must exist. That of course is true of sensations, but more than that is true. Sensations not only must exist in order to be known, but they may exist, and often do for a considerable period of time before they are known, and I said that if we realize what knowledge is we shall see that in the very nature of the case this is so. For what is it to know a thing? It is to put it into a class, is it not? A child sees a menagerie, and fixes his eyes on an animal unknown to him. Why does he not know it, or rather, in what does his ignorance of it consist? In his inability to class it. He looks at it steadily and suddenly shouts "O it is an elephant!" What has happened? How is it that ignorance has given place to knowledge? He has suddenly noticed the resemblance between this unknown object and certain pictures he has seen in his reading book, he has put it into a class, and when he has classed it, he knows it.

This putting things into classes constitutes the essence of *all* knowing. Some kinds of knowledge we call science — orderly, systematic knowledge —

knowledge of laws and causes and principles; other kinds we call unscientific, because in these cases our knowledge is unsystematic and disconnected. But whether we know scientifically or unscientifically, in order to know a thing we must classify it, and in the act of classification consists our knowledge of it. Before Newton, no one understood the motions of the moon. He helped us to understand them — explained them, as we say — by helping us to classify them. But in what does our understanding of them consist? Merely in that we have put them into a class along with many familiar facts. As the child felt that he knew the animal in the menagerie when he noticed its resemblance to the pictures he had seen in his reading book, so we feel that we understand the motions of the heavenly bodies when we have put them into the same class with familiar facts, such as the falling of a leaf, or the dropping of a stone when it ceases to be supported. As to the *cause* of these motions — as to the nature of the force upon which they depend — we are as ignorant to-day as were those old Chaldeans who used to stand on the plains of Chaldea, gazing up into the sky with that wondering curiosity which has

been so well called the mother of knowledge. We call it gravity, and think we know all about it, simply because when the mind sees the resemblance between a strange fact and familiar facts the sense of mystery is gone. What is the cause of death? Would you think it a sufficient answer to say that all things die? And yet that is a precise illustration of our explanation of the motions of the heavenly bodies. What make the heavenly bodies move? The law of gravitation, or the force of gravity, says one; but that is only another way of saying that all bodies move.

If, then, all knowing is merely classifying, if a thing unknown is merely a thing unclassified, I think you can see that the first sensation *must* be unknown. If to know a thing is to classify it, the first sensation cannot be known, because it cannot be classified. When a boy comes into possession of his first piece of money, he cannot put it into a purse along with the rest of his money because he has no other money. In like manner, the first sensation cannot be classed with preceding sensations, because, since it is the first, it has no predecessors.

When, therefore, I say that knowledge takes its rise in sensations, I do not mean that the first

experience of sensations constitutes the beginning of knowledge, but that *sensations constitute the first material upon which the mind's powers of knowing are exerted*. I think the last lesson has made it clear that before objects can be perceived there must be a knowledge of sensations. If perception consists in grouping our sensations together and regarding them as qualities of external objects plainly in order to perceive them, there must be a knowledge of the sensations which are grouped together. The grouping by the mind of unconscious sensations would be an impossibility.

I want to make this entirely clear, because I want you to see how important it is for you to cultivate the senses of your pupils. I told you some time ago, you will remember, that the facts of which we are conscious and intuitions constitute the foundation of everything we believe. I urged you to get as clear an idea as possible of what consciousness is, and of the facts of which we are conscious, in order that you might avoid building your temple of knowledge upon a rotten foundation. But a good building requires not only a good foundation but good materials. Be your foundation ever so poor, unless your materials are good, your

building will be worthless. Now, the knowledge gained through the senses is the material, for the most part, out of which the edifice of knowledge is constructed. If it is vague and indefinite, the knowledge based upon it will be vague and indefinite, too; if it is inaccurate or false, so will the knowledge be which depends upon it.

But the knowledge gained through the senses may be accurate as far as it goes and yet be very imperfect, because of its incompleteness. You know that a blind man is shut out from a whole world that is open to you. But he whose sense of sight is highly cultivated just as certainly has daily access to a world into which the ordinary man cannot enter. He sees a thousand delicate colors, a thousand pleasing gradations of light and shade that are as entirely beyond the range of the ordinary man's vision as though they came through a sense of which the latter was deprived. Read Ruskin's essay on the sky and then tell me if the sky he saw and the sky which you and I see are the same? Clear or cloudy is the ordinary description of the sky. That would be as inadequate a description of Ruskin's sky, as it would be of Americans to say that they are divided into two

classes — men and women ! To Ruskin, the sky is one of the many beautiful things in whose beauty his trained eye enables him to revel — a beauty as changing and as various as the face of the sea, and as charming as the beauty of those we love.

And this brings us to another reason for cultivating the senses of our pupils. I told you in the first lesson that one of the ways in which the study of Psychology would help you is that it would help you to see at what you ought to aim. Possibly you do not yet see that the development of the æsthetic powers of your pupils, of their power to perceive and appreciate beauty, is an important part of their education. If you do not, all I can do is to bid you think and think until you see that a mind without the power to perceive and enjoy the beauty of the world is as truly abnormal and one-sided as a human body would be without arms. If you should go to the famous gallery in Dresden, you might look at Raphael's immortal painting and see nothing to admire. But if you did not, the fault would not lie in the picture. The beauty is there, and if a first study of it does not reveal it, you should go and go again — make it your companion, as it were, and compel it to reveal to

you the beauty that has so enraptured all the lovers of beautiful paintings since Raphael's time.

In like manner, if you do not *see* that the power to appreciate the beautiful is as truly to be desired as a good memory or excellent reasoning powers, I can not show it to you, nor can any one. But if you will make it a subject of careful study, you will come to see it as clearly as you do the axioms of geometry.

There are, then, three reasons why we should do what we can in the way of training the senses of our pupils: (1), it makes their knowledge more accurate; (2), it makes it more complete; and (3), it tends to develop their power to see and appreciate the beauty of nature.

LIST OF QUESTIONS.

1. What do we do when we know?
2. Illustrate.
3. What is the difference between scientific and unscientific knowledge?
4. Illustrate.
5. Show that the first sensation is necessarily unknown.

6. What is meant when it is said that all knowledge takes its rise in sensation?

7. State the three reasons why it is important for us to train the senses of our pupils?

8. Give illustrations.

9. What is meant by æsthetic faculty?

LESSON XIV.

THE CULTIVATION OF THE OBSERVING POWERS.



IN the last lesson, I endeavored to show the reasons for the cultivation of the observing powers. The question I wish to try to answer to-day is, What can the teacher do in the way of cultivating the observing powers of his pupils?

Of course all you can do is to put them in such positions, to surround them with such influences, as will induce them to observe more closely, carefully, and methodically than they otherwise would have done. It is, perhaps, worth while to call attention here to a fact which people often lose sight of — the fact that a comparatively small part of any one's education is acquired at school. There is a great difference between a child at birth and the same child at the age of six, and that difference is the result of the unfolding, of the education of his powers. Partly through the spontaneous promptings of instinct, partly through the influences by

which he is surrounded, he has exercised his various powers of mind and body so that the helpless babe has been transformed into the child of six. Sometimes the interest in natural objects is so great that without any stimulus from parent or teacher the child naturally, as we say, observes closely and carefully and so becomes a trained observer. And sometimes the disinclination to observation is so strong, or, in other words, the impulse to that kind of activity is so feeble, that the utmost skill of the teacher is of little avail. You will remember that in the lessons on attention, I said that voluntary attention is of little value unless it paves the way for involuntary attention. If you will think about that carefully, it will enable you to see what you can do, and what you cannot do, in the way of cultivating the observing powers of your pupils. For the cultivation of the observing powers really consists in the formation of habits of close and careful attention to objects perceived. All you can do to help your pupils to form such habits, is to give them motives for attending, but if they only attend under the pressure of your motives, if the objects attended to open up no interesting phases, if, in a word, voluntary

attention does not pass into involuntary attention, all the teaching in the world will not make them good observers. In the great majority of cases, however, there is enough of capacity for interest in natural objects to make that interest an effective motive in forming habits of careful observation, if the right means are employed to develop it.

Of those means, perhaps the best the school authorities as a rule will not permit you to employ. If you should propose to close your school the middle of Friday afternoon, to take a walk with your pupils through the woods and across the fields for the purpose of calling their attention to the flowers and trees and leaves and birds, they would say that it would be a waste of time. They think it altogether preferable for you to employ your pupils in memorizing the names of the capitals of the various countries of the world, the length of the rivers, the heights of the mountains and so on. But if you cannot go with them you can induce them to go and ask them to tell you what they saw. The knowledge that they will have to give an account of what they have seen will be a motive for observing more carefully than they otherwise would have done. And indeed

unless you are yourself a loving observer of nature, your company would be of little service to them. In the School of the Far-off Future, when men will universally realize the importance of the proper development of the various faculties of the mind as keenly as trained physiologists to-day realize the importance of the health of the various organs of the body, in that School, I believe no teacher will be allowed to enter—at least in the primary grades—until he has stood certain tests that would seem very curious to us. Is the face of nature indifferent to him? Are her smiles in summer and her frowns in winter alike lost on him? Can he look upon the brooks that “fret” along their channels and the sheep and the cows grazing in the meadows and the wild flowers growing along the hedgerows and hear the songs of birds with no feelings of gladness? If so, I believe he will be regarded as lacking an essential element of a teacher of boys and girls. The ideal teacher of the ideal school will look on the face of nature with something of the same fondness that the mother looks on the face of her child. As every act of her child is an object of interest to the mother so every detail of nature will be of interest

to this teacher, and he will watch the changes that pass over the face of nature as winter gives way to spring, and spring to summer, and summer gradually dies away into autumn, with something of the same sad and yet fond interest that the mother watches her child as she travels on the road to womanhood.

But we are not living in the future, and we have to take ourselves as we do our pupils—as we are, and make the best of us. And it seems to me that if we do not care for nature we may realize the importance of helping our pupils to care for it, and to do this, as I have said, the only thing we can do is to give them motives for attending to it more closely than they otherwise would have done. You might have them make lists of the various trees and flowers and plants and birds of the neighborhood, and note the dates when the trees begin to put forth their leaves and the flowers to bloom and the birds to build their nests. If the birds are of a migratory sort, you should have them observe when they come and when they go and, in any case, what they feed on, and how they build their nests. You should have a school museum composed entirely of interesting objects which

they have collected. In such ways, you may induce them to become familiar with every bird and tree and flower and plant in the neighborhood, and during the process three-fourths of them will have acquired such an interest in nature as will make them good observers for life.

You can turn their fondness for drawing into account in the same direction. Have them draw not pictures but real objects from memory, and the result will be that the next time the object is seen it will be observed much more closely and the image of it will be fixed in the mind much more definitely.

You should give object lessons. But if these lessons are to have any value they must be carefully prepared and carefully given. Some teachers seem to imagine that there is a virtue in an object lesson as such, but in the nature of the case this is not so. If an object lesson is of any use in cultivating the observing powers of your pupils it is because it induces them to observe more closely than they otherwise would have done; if it does not do that it will leave their observing powers just where it found them.

An object lesson may be made to serve two

important purposes besides furnishing motives to your pupils to observe: You may make it a means of imparting knowledge, and of enlarging the range of their vocabulary.

When you are preparing an object lesson you should make up your mind in precisely what ways you will reach these various ends. You will of course conduct it for the most part by asking questions. If you are dealing with little children, you will begin by asking them questions which they can answer with ease, *for the sake of interesting them in the lesson*. Children like to display their powers, and they like lessons which give them opportunities to do that. But you will be careful to note that to interest them in the lesson *is by no means the same thing as interesting them in the object*. You interest them in the object when you ask them questions about it which they can not answer, but which they can find the answer to by more careful observation. Accordingly, a part of your preparation of an object lesson should consist of such a careful study of the object as will enable you to observe certain qualities which you think have escaped their attention, in order that you may be able to induce them to study it more

carefully than they have ever done before, and give them the pleasure of finding out something for themselves.

You should carefully decide also precisely to what extent you wish to enlarge their vocabulary. If, for instance, you are giving a lesson on glass, you can arrange your questions so as to get them to tell you that they can see through it. Then you can tell them that things which can be seen through are transparent, and ask them to tell you as many transparent things as they can think of.

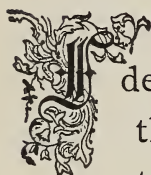
I will close this lesson by quoting a very sensible paragraph from M. Buisson on this subject: "It is not desirable to have the object lesson begin and end at a fixed hour. Let it be given on the occasion of a reading or writing lesson, or in connection with the dictation exercise with the lesson in history, geography, or grammar. If it occupies two minutes instead of twenty it will be only the better for that. Often it will consist, not in a series of consecutive questions, but in one spirited, precise, and pointed question, which will provoke a reply of the same sort."

LIST OF QUESTIONS.

1. What must you do to cultivate the observing powers of your pupils?
2. Is all the education we receive acquired at school?
3. Explain your answer.
4. What is the most important means of cultivating the observing powers of your pupils?
5. Why is it important for a teacher to be a lover of nature?
6. What are the uses of a school museum?
7. What three purposes should an object lesson serve?
8. How do you think an object lesson should be prepared?
9. Have you ever given object lessons, and if so, on what subjects?

LESSON XV.

MEMORY AND THE LAWS OF ASSOCIATION.



defined perception, you will remember, as that act of the mind in which we group together sensations and ideas of sensations and regard them as qualities of an external object. How is it possible for us to group ideas of past sensations with present sensations? Because we remember the past sensations. How do we come to recall those past sensations in connection with present sensations? Because of the laws of association of ideas.

If you think about anything, no matter what, you are sure to find yourself thinking the moment after of something connected with it. Think about last summer's institute and you will think of some of the friends you met there, of some of the people you visited, or some of the books you read. Think about Christmas and you may think of hunting, or of the party you attended, or of the turkey you had for dinner, and so on. There is nothing which you can think about that has no

connection with anything else in your experience, and when you think of anything you are sure to think of some of the things which have been or are connected with it. This fact, that thinking of anything tends to make us think of something else connected with it, is called the association of ideas.

If you watch the course of your thoughts for an hour, you will find that while the very great majority, if not all of them, occur to you through the association of ideas, there are very different kinds of connection between the ideas recalled and the experiences which recall them. Thus, if you think of a hill, it may make you think of a walk you took there last night, or it may make you think of one like it near your own home, or it may make you think of the tremendous forces that raised it above the surrounding country. In the first case, the thought of the hill makes you think of the walk you took there, because when you were taking the walk you thought of the hill. In other words, the thought of the hill and the thought of the walk *were in your mind at the same time*. In the second case, the thought of the hill makes you think of one like it near

your home, not because you have ever seen them both at the same time, or because you have ever thought of them both at the same time before, but because they are *like each other*. In the third case also, the thought of the hill does not make you think of its cause because you have thought of them before, but because *they sustain to each other the relation of cause and effect*.

Most Psychologists call association of the first kind, association by contiguity. Others, Fitch, for example, call it mechanical association, and it seems to me it will be useful for you to remember both names and the reasons for them. The reason for the first name, association by contiguity, is self-evident. Contiguity means nearness, and this kind of association is called association by contiguity, because the things associated were thought of at or about the same time. The reason for the other name, *mechanical* association, will be clear when you understand that it is used to contrast this kind of association with another called rational or logical. For instance, when the thought of the hill makes you think of one like it near your own home, there is an inherent, rational connection — *similarity* — and not a mere external or mechani-

cal connection between them. If the first time a child sees a Chinaman and a steam-engine, he sees them both together, the next time he sees one of them, he will be likely to think of the other, not because they have any inner connection but because they were seen at the same time. This kind of association is called association by contiguity because the things associated were thought of at or about the same time. It is called mechanical association because the things associated have only a mechanical connection with each other. It is this kind of association which enables you to recall the names of the people you know when you see them. The *looks* of the person, and his name has been in your mind at the same time and hence one of them tends to recall the other. It is the same kind of association which makes the odor of a rose recall its looks. The whole process of learning a language whether your own or some other, is based on this kind of association. Learning a melody, or committing a declamation are examples of the same kind of association.

I would like to have you note that things as unrelated as it is possible for things to be in this world, may be brought side by side in space, and,

if so, we may see them at the same time; and then, according to the law of mechanical association, the thought of one will tend to recall the thought of the other. Also, events totally disconnected may happen at the same time, and be known by us as occurring at the same time; and, if so, the thought of one will afterwards tend to make us think of the other according to the law of mechanical association.

I call your attention to this because I wish to make it entirely clear that the connecting link in the case of things mechanically associated is time, and that this kind of association is called mechanical for this very reason. But bear in mind that the time which forms this connecting link is *not the time in which events happen, but the time in which we think of them*. The Declaration of Independence makes you think of the Fourth of July, not because it was made on that day, but *because the thought of the two have been in your mind at the same time*.

Contrast, now, this kind of association with that which exists between two similar objects where the thought of one tends to recall the thought of the other, and you will see that the relation be-

tween them is no longer external or mechanical, but *inner*. It is the qualities of things themselves which makes them like each other. One peach is like another peach because of the qualities which make them peaches; and like things are associated, not merely because they are alike, but because the mind perceives their likeness. Hence we call this kind of association logical or rational.

The essence of logical or rational association, you will note, consists in the fact that the bond which connects things logically or rationally is some *inner relation* perceived by the mind itself. The inner relations which I have used thus far for purpose of illustration, are those of likeness and cause and effect. There are many others. There is the relation of an instrument and its uses, and a principle and its consequences. Thus, the thought of a gun will make you think of shooting, and the thought of a theorem in geometry will make you think of examples of it.

I hope you will see to it that you understand the difference between the logical and rational memory perfectly. There are many tests of good teaching, but few which go more nearly to the root of the matter than the use which the teacher makes


of the memory, or rather the kind of memory which his teaching tends to cultivate. If a teacher relies on the mechanical memory mainly, if he does not encourage and help his pupils to associate what they have learned mechanically in a logical or rational way, he is pretty near a failure.

LIST OF QUESTIONS.

1. Define perception.
2. What is meant by the association of ideas?
3. State and illustrate the two kinds of association.
4. State and illustrate the connecting link in the case of mechanical association.
5. State and explain the connecting link in the case of rational association.
6. Mention as many relations as you can think of which form connecting links in the case of rational association.
7. Why is it important for you to distinguish between the two?

LESSON XVI.

MEMORY AND THE LAWS OF ASSOCIATION.

N the last lesson, I endeavored to explain what is meant by association of ideas and to define and illustrate the two kinds of association. I said that mechanical association is that kind of association in consequence of which anything we are thinking about tends to make us think of something else we thought of at or about the same time; logical or rational association I explained as the kind of association in consequence of which anything we are thinking about tends to make us think of something else between which and the thing we are thinking about, the mind has perceived relations. I said also that it was of great importance for the teacher to distinguish between these two kinds of association in order that he may know what kind of memory to cultivate. For the teaching which cultivates the rational memory, the memory which depends on rational association, is good teaching, while the teaching

which cultivates the mechanical memory, the memory which depends on mechanical association, is, with the exception of certain cases which I shall mention later, bad.

The reasons why it is important for us to help our pupils cultivate their rational memory are manifest. In the first place, when they associate things logically, they are exercising, and therefore cultivating, the higher powers of their minds. Logical or rational association we have seen, is association according to some inner relation. But, of course before this relation can form the basis of an association it must be apprehended, and this act of apprehension is an exercise of the higher powers of the mind. Fitch says that the difference between a wise man and one who is not wise consists less in the things he knows than in the way in which he knows them. The wise man knows things in their relations, I think he would say, has his knowledge classified, in one word, has associated what he knows rationally. In the same paragraph, Fitch observes that an historical fact is learned to little purpose unless it is seen in its bearing on some political, economical or moral law. I am sure you agree with him there. I am

sure you understand that a teacher may know facts enough about history to pass an ordinary examination very creditably and yet know them to very little purpose simply because he knows them in a purely mechanical way, simply because he has associated them mechanically.

Another reason for helping our pupils cultivate their logical memory is that they are more interested in what they have associated logically. To learn facts by means of the mechanical memory is an irksome task; to apprehend the relations between those facts, to associate them logically, in other words, is a delightful labor, especially if the pupil has been led to discern for himself the relations which form the basis of the association. Further on, I wish to call your attention particularly to the fact that interest is a great help to the memory. Here, I will only remind you that it is quite as important for you to interest your pupils for other reasons. If we interest our pupils we do what we can to make them students for life, and that is a much more important matter than having them learn well any particular subject. Indeed, I think you will admit that if we had to choose between having our pupils careless and indifferent to

study at school, and having them studious through life, it would be entirely wise for us to choose the latter. I do not mean, of course, that such a choice is possible. On the contrary, as I am trying to show in this very paragraph, the best way to make him a student for life, is to make him an interested student at school.

Another reason for cultivating the logical memory is that any one with that kind of memory can use what he knows. Some one has said that a man could not stand under a tree with Edmund Burke during a shower of rain without perceiving that he was in the company of a very remarkable man. The reason doubtless was, not that Burke was continually saying brilliant or witty things, but that he said nothing that was not to the point. A man may know a great deal mechanically, and yet be unable to use his knowledge, because he cannot think of it when he wants it, and cannot see how he can use it when he does think of it. Such a person's mind is like a well-filled scrap bag; there is a good deal in it, but everything is in such disorder that you have to turn it upside down, as it were, before you can get any particular thing you want out of it.

You have doubtless heard the saying, "Great memory, little wit." I think we can now see what truth there is in it. It is altogether possible for a person to have a great mechanical memory and have very little mind besides. Indeed, there are plenty of cases on record in which idiots have shown remarkable power of remembering facts mechanically. But to have a fine logical memory and a poor mind is an impossibility.

Educated persons often complain that their memory is not so good as it was in their youth. What they mean is that their mechanical memory is not so good. They have acquired the very excellent habit of fixing their attention on important matters and neglecting the trivial events that are not worth remembering, and because they forget them, while their uneducated friends remember them, they imagine that their memory suffers by comparison. But it is not so. The educated man cultivates his logical memory, and neglects for the most part, his mechanical memory, while the uneducated man does the exact opposite. It is natural therefore for the uneducated to have better mechanical memories than the educated. As Dr. Harris observes, if we want the

child's memory we can have it. We can force ourselves to ignore the difference between the important and the unimportant and attend impartially to everything that comes before us. So far as we succeed in doing this, we shall remember important and unimportant matters with equal accuracy. But is such a memory desirable? No, because in that case we shall remember important matters less accurately than we should have done otherwise.

But I do not mean to convey the impression that everything can be learned by means of the logical memory. Logical association consists in connecting facts together by means of some inner relation. But before we can see the relations between facts, we must know the facts themselves.

For this reason, there is a place for the mechanical memory in education. But here you should note that there are as many different memories, so to speak, as there are kinds of facts to be remembered. There is a memory of colors, a memory of dates, a memory of rocks, and so on. You know very well that some of your pupils have an excellent memory for geography, others for grammar, others for history, and so on.

Now, since memory is not one faculty, but many, it follows that there is no such thing as a universal cultivation of the memory. If you find your memory weak in any particular direction, what you ought to do is to practice it on the kind of things you find most difficultly in remembering. Dr. Harris gives an interesting and instructive account of his own efforts in cultivating his mechanical memory. When he was about eighteen, he tells us, he had great difficulty in remembering dates. He cultivated his memory for dates in the following manner: The first day, he learned the dates of accession of three or four English kings; the next day, he learned two or three more, and reviewed those he learned the preceding day; the next day, again reviewing from the beginning, he added two or three more to the list, and so on, until he had thoroughly learned the entire list. After two or three months, he found he had forgotten some of them, so he learned them again, and after two or three years he repeated the operation. By such training, he tells us, his memory for dates was so improved that he has never since had any trouble in remembering such dates as he


cared to remember. He cultivated his memory for names in the same way.

LIST OF QUESTIONS.

1. Explain and illustrate the two kinds of association.
2. Show that in cultivating the logical memory of your pupils you are cultivating the higher powers of their minds.
3. What does Fitch say is the difference between a wise man and one who is not wise?
4. Show by illustrations that helping your pupils to associate facts logically, interests them.
5. Give another reason for cultivating the logical memory.
6. Explain what is meant by "Great memory, little wit."
7. How many memories has the mind?
8. What follows from this as to the cultivation of the memory?
9. How did Dr. Harris cultivate his memory for dates?

LESSON XVII.

IMAGINATION.

 BEFORE taking up the subject of imagination, I wish to add a few more words to what I was saying at the close of the last lesson about the circumstances under which it is proper for us to lay stress on the mechanical memory.

All verbal memorizing, of course, is mechanical memorizing. Those teachers who require, or even permit, their pupils to answer questions in the words of the book, cultivate the mechanical memory at the expense of the rational. I think it would be well for you to make it a rule never to allow your pupils to memorize words whenever you have any doubt as to the value of it. Fitch has stated with great clearness the circumstances under which verbal memorizing is valuable. He puts it as follows: "When the object is to have thoughts, facts, reasonings, reproduced, seek to have them reproduced in the pupil's own words. Do not set the faculty of mere verbal memory to

work. But when the words themselves in which a fact is embodied have some special fitness or beauty of their own, when they represent some scientific datum or central truth, which could not otherwise be so well expressed, then see that the form as well as the substance of the expression is learned by heart." Compayre, commenting on this, says that "according to this, it is easy to fix the limit which verbal repetition should not pass. In grammar, the principal rules; in arithmetic, the definitions; in geometry, the theorems; in the sciences in general, the formulas; in history, a few summaries; in geography, the explanation of a few technical terms; in ethics, a few maxims; these are the things which the child ought to know word for word, on the condition of course that he perfectly understands the meaning of what he recites, and that his attention is called not less to the thought than to the form of the expression." To this I would add that no week should be allowed to pass by in which the pupil is not encouraged to learn word for word some beautiful sentence or paragraph, and thus store his mind with beautiful thoughts beautifully ex-

pressed, by reflection upon which, he may cultivate his taste for beautiful literature.

And now I have said substantially what I intended to say about mechanical and rational association and mechanical and rational memory. It has been my aim to make you realize that of all the subjects within the whole range of Psychology there is scarcely one of more practical importance than this. You are constantly making use of the memory of your pupils. *How* you make use of it, is the question the answer to which largely determines the quality of your work. And, although I have explained as clearly as I can the kind of use which I think you ought to make of it, I am very much afraid that many of you will be considerably embarrassed when you undertake to put my suggestions into practice. May I tell you the reason? It is simply this: You have difficulty in helping your pupils to associate logically or rationally the facts of United States History, for example, simply because they are not so associated in your own minds. You may understand ever so clearly the distinction between mechanical and rational association, and appreciate ever so vividly the importance of the latter, but you cannot apply

that distinction in teaching any subject unless you have yourself associated the facts of that subject logically or rationally. As long as the addition, subtraction, multiplication, and division of whole numbers seem to you to be entirely disconnected operations, and each of these entirely disconnected from the addition, subtraction, multiplication, and division of common fractions, and these from the same operations in decimal fractions, you cannot enable your pupils to associate the facts of arithmetic rationally, because they are not so associated in your own mind. In like manner, as long as you see no connection between the very different kinds of people who settled at Plymouth and Jamestown, and the differences between the people of Massachusetts and the people of Virginia at the close of the Revolutionary War for instance; as long as you see no connection between these differences and their reluctance to unite together in a single strong government; as long as you do not see how this reluctance could only be overcome by compromises in the constitution which were in the nature of contradictions, which contradictions under the influence of slavery led to other contradictions—each party affirming his own view with

passionate intensity—and these to the Civil War — until you see these things as clearly as the sun in the noon-day heavens, American history is a sealed book to you, and it will be a sealed book to your pupils so far as help from you is concerned, simply because the facts are associated in your own mind in a merely mechanical way. In like manner, until you realize in detail to what extent the character and history and institutions of a people are a matter of latitude and longitude and soil and climate; until you see that the explanation of the building of a Chicago in fifty years is to be found in the facts of physical geography; until you see that if the soil and climate and other physical conditions of the North and the South had been reversed the parts they played in the Civil War would have been reversed — until you see all this and much more of a similar character you cannot teach geography properly, because you do not *know* geography in a rational or logical way.

In a word, to make a practical use of this distinction between logical and mechanical memory you must see it, in the first place, and in the second, you must know the subjects you undertake

to teach in a logical or rational way, and the latter is just as indispensable as the former.

I pass on now to speak of imagination.

If you have ever watched the growth of the mind of a child, I am sure you have noticed that a child has the power to remember objects and persons before he has power to think of them when they are absent. In other words, a child will show in the most unmistakable ways that he knows his father or mother or nurse several months before he gives any evidence of thinking about them when they are absent. This latter power of the mind, this power to form ideas of things not present to the mind, Psychologists call imagination. You will get an accurate idea of what it is if you will think of it as the image-making faculty, provided you give the right meaning to "image." In ordinary usage the word is limited to the representation of visible things. But in psychology we may not only speak of the image of a sound, taste, touch, smell, but of the image of a hope or a fear or even of a volition. As used in psychology the word image is used to denote the *mental representation of any experience whatever, or any combination of experiences.*

If imagination is the faculty of making images, it is evident that there are two kinds. For when the child cries for his absent mamma, the act of imagination evidently consists in holding before the mind a copy more or less faithful of the mother as seen and known. But the same child, when he gets a little older, may make pictures of things he has never seen—of things that have never come within the range of his experience. He may put the head of a dog on the body of a horse, and give to the horse the legs of a man, and so on. The first kind of imagination is called *reproductive*, since it reproduces past experiences; the second is called *constructive*, since it takes ideas or images furnished by the reproductive imagination and combines them into new wholes. This brief explanation is enough to make it clear that the constructive imagination can not act until the reproductive imagination has first supplied the materials. As a bricklayer can not lay bricks unless he has bricks, or a shoemaker make shoes without leather, so the constructive imagination can do nothing unless it is furnished with material by the reproductive imagination.

LIST OF QUESTIONS.

1. State and illustrate the circumstances under which verbal memorizing is valuable.

2. Is it possible for a teacher to understand the difference between mechanical and rational memory, and have difficulty in applying it; and, if so, why?

3. Illustrate in the case of history.

4. Illustrate in the case of geography.

5. Illustrate in the case of arithmetic.

6. Illustrate the difference between imagination and memory.

7. Define imagination.

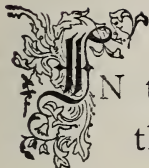
8. Define image.

9. State and explain the two kinds of imagination.

10. Show that constructive imagination is dependent upon reproductive imagination.

LESSON XVIII.

IMAGINATION.



IN the last lesson, I defined imagination as the image-making power, and I said that inasmuch as the mind makes two kind of images, images which are copies of past experiences, and complex images the elements which are copies of past experience, but which themselves are not copies of past experiences, there are two kinds of imagination, reproductive and constructive. Psychologists call the first kind of imagination reproductive, because it reproduces the past experience; they call the second constructive, because out of elements furnished by the reproductive imagination, it constructs new wholes, wholes which are new in the sense of having never before been in the consciousness of the individual who experiences them.

Perhaps you have difficulty in distinguishing between reproductive imagination and memory. You hear a song, and it makes you think of the friend whom you heard sing it a few days age; in

other words, an image of your friend arises before you, as you listen to the song. This is both an act of memory and reproductive imagination, and the question is, what is the difference between the two?

To begin with, in the early stages of memory, it may exist without imagination. I called your attention in the last lesson to the fact that a child has the power to remember objects and persons before he has the power to think of them when they are absent. When he sees them, he knows that he has seen them before, in other words, he remembers having seen them. When they are absent, he does not think of them; in other words, he does not form an image of them, simply because he has not the power to.

But when he begins to think about his absent mamma, as he will by and by, what then is the difference between the two? When he thinks about her, does he not remember her, and is not his thought of her an image, and so the product of the imagination? Yes, but I think you can see the difference between simply thinking of her, or rather between simply having the thought or image of her in his mind and knowing that image as the image of one he has seen. The only differ-

ence between constructive imagination and reproductive imagination, we have seen, is that the images resulting from reproductive imagination are copies of past experiences, while those resulting from constructive imagination are not. Now it is altogether possible for one to suppose that what are really products of reproductive imagination are products of constructive imagination, *simply because the images resulting from the act of reproductive imagination, are not accompanied by a recollection of the original experiences.* In other words, when the images of reproductive imagination are not accompanied by memory, they are confused with products of the constructive imagination.

It may, perhaps, serve to make the distinction between the two clearer to call your attention to the fact that the exercise of the reproductive imagination is a part of which the memory of an absent object is the whole. There can be no memory of an absent object unless the image of it is in the mind, and that image is the product of the reproductive imagination. But having the image of the absent object in mind, and remembering that object are not the same. *There is no complete act*

of memory until the image in the mind is recognized as the image of some particular object or thing already experienced.

It is putting the same fact in another way to say that an exercise of reproductive imagination is a condition of the memory of an absent object. How was it that the song made you think of the friend you heard sing it a few evenings before? Through the laws of association, the song brought before the mind an image of the singer — the product, you will observe, of the reproductive imagination — and this image you knew as the image of your absent friend — an act of memory. We may state the order of dependence as follows: the laws of association condition the activity of the reproductive imagination, and the exercise of this is the condition of memory.

Hoping that the difference between memory and reproductive imagination is now clear, I proceed to call your attention in a little more detail, to the difference between the reproductive and the constructive imagination. But first of all, it would be well for you to try to realize the extent to which imagination is active in our mental life. There is not a moment in your waking life when

images of one sort or another are not in your mind. Did you ever catch yourself when you were not thinking of something? It is safe to say that you never did, and these thoughts of things, these images, are products of imagination. When you are talking with a friend, or reading a book, you are exercising your imagination. When your pupils are listening to you intelligently, they are exercising their imagination. What kind?

To answer that question, all you have to do is to decide whether the images that go through their minds as they listen to you are copies of past experiences which they have had. Unless you are narrating an event which they have themselves observed, evidently they are not. The imagination then which enables your pupils to understand you when you are talking to them is constructive.

This fact is well worthy of your careful attention. You have probably been accustomed to think of the constructive imagination as a power quite infrequently exercised. The novelist, you have supposed, makes great use of that kind of imagination, but ordinary people, under ordinary circumstances, have very little occasion for it. This supposition you now see to be radically false.

When you are talking to your pupils, unless what you say causes certain images to arise in their minds—causes, in other words, a certain activity of their imaginations—they do not understand you; and inasmuch as what you are trying to do is to give them an idea of something which they have not experienced, the imagination which you are trying to stimulate is the constructive.

I have already called your attention to the fact that the constructive imagination depends upon the reproductive. It is the combination of images furnished by the reproductive imagination into new wholes that constitutes the activity of the constructive imagination. That being the case, you see from a new point of view the necessity of making a careful study of your pupils. You would not hire a man to build a house for you without furnishing the necessary materials. Be equally reasonable with your pupils, and do not expect them to build up images out of nothing. Many a little boy or girl attaches no sort of an idea to the word "ocean," simply because the teacher has not taken pains to dwell on the experiences which might have made the required activity of the constructive imagination possible. In like manner,

many a boy reads his history through two or three times and never forms a clear idea of a nation for the same reason.

It cannot be too often repeated that no matter how clearly you see the necessity on theoretical grounds of making a study of the minds of your pupils, and no matter how constantly you make an attempt to put it into practice, there is but one way in the world in which you can be sure that you have not made a mistake, and that is by questioning. You will constantly suppose that there has been an exercise of the constructive imagination, when there has not been; in other words, that your pupils understand what they do not understand, unless you make sure of the matter by questioning. You talk to your pupils about a great many matters which by long reading and reflection have become familiar to you. First comprehended by means of the activity of the constructive imagination, they are now understood simply by means of the reproductive imagination since all you do is to recall past processes of constructive imagination. You are likely to fail to realize that any one should have any trouble with what is so simple to you and, I repeat, the only

way to guard against the mistakes that would thus arise is by everlasting questioning.

LIST OF QUESTIONS.

1. Explain the terms "constructive" and "reproductive" as applied to the imagination.

2. State the difference between reproductive imagination and memory.

3. Illustrate it.

4. Why is it that reproductive and constructive imagination are sometimes confused with each other?

5. Show that an exercise of the reproductive imagination is the condition of the memory of a past object?

6. State the circumstances under which the activity of the constructive imagination is necessary.

7. What bearing has this lesson on your work in teaching?

LESSON XIX.

IMAGINATION.



IN the last lesson, I tried to point out the difference between memory and the reproductive imagination, and the reproductive and the constructive imagination. It is altogether worth your while to dwell on this latter distinction with special care. Unless you take pains to dwell on the fact that all image-making is imagination, you will be sure to suppose that psychologists mean the same thing by imagination that people do when they use the term in ordinary conversation. That would be a great mistake. When people in ordinary conversation speak of a man of great imagination, they never mean reproductive imagination; nor do they have in mind the whole of constructive imagination. They mean that kind of constructive imagination which poets and painters and novelists possess in an unusually high degree, the power of combining ideas or images furnished by reproductive imagination into new wholes without having received suggestions

from anyone else. When you read aloud in my hearing a chapter in a novel, for instance, I exercise the constructive imagination provided I understand you. But I exercise it under the influence of suggestions received from without through the sense of hearing. Now that kind of constructive imagination is not called imagination in the sense in which the term is used in ordinary language. The man who wrote the chapter used imagination, but I, who read it understandingly, do not use imagination — as people generally understand it.

You remember, I hope, that there are three classes of mental facts, knowing, feeling, and willing. We exercise constructive imagination in connection with all of them. I have called your attention to the fact that in order to acquire knowledge, in order to gain knowledge from books, or from conversation, we have to exercise the constructive imagination. There is only one other way of gaining knowledge, and that is by finding out a thing for ourselves, by discovery. When you solve a problem in arithmetic you *discover* the answer for yourself. You bring before your mind, imagine, the conditions stated in the problem, and imagine step by step the results of these

conditions until you reach the result called for, the answer. In like manner every instance of learning a thing for one's self depends upon the proper exercise of the constructive imagination. The detectives, for example, who worked up the Cronin case, had in the first place to get all the facts they could bearing on the murder, and then they began to make suppositions, imagine various things, to account for them. Simply collecting the facts was not finding out who murdered Cronin. To find out who committed the murder, various suppositions had to be made until that one was reached which alone accounted for the facts.

It is the same with discovery in science. Men had been studying the motions of the heavenly bodies for thousands of years before the time of Newton, but they had been unable to account for them. When Newton saw the apple fall, it occurred to him that the motions of the moon might result in part from an attempt of the moon, so to speak, to fall to the earth. Now the act of the mind alluded to by "it" in the phrase "it occurred to him," was an act of constructive imagination. And every step of the reasoning from

this act of constructive imagination until the proof of the law of gravitation was reached was made possible by further acts of constructive imagination; each step in the reasoning consisted in the perception of a certain relation between things realized by the mind through exercises of constructive imagination. If *this* is so, the "this" being imagined constructively, then *this*, likewise imagined constructively, is so, and so on to the end.

Hoping that it is now clear that we exercise constructive imagination in order in the first place to acquire knowledge, and in the second, to discover things for ourselves, I pass on to say that we also exercise it for the gratification of the feeling.

When you build air-castles, what are you doing? Exercising the constructive imagination—bringing before your mind ideas and images of what you would like to be real. *Why* do you do it? Because it pleases you—because it gratifies your feelings. That is the reason why most people are so fond of reading novels. The events which the novelist enables them to realize, please them more than the prosaic realities of every day life. Sully has a paragraph on this subject that is worthy of careful attention. "The indulgence in these

pleasures of the imagination," he says, "is legitimate within certain bounds. But it is attended with dangers. A youth whose mind dwells long on the wonders of romance may grow discontented with his actual surroundings, and so morally unfit for the work and duties of life. Or, what comes to much the same, he learns to satisfy himself with these imaginative indulgences; and so, by the habitual severance of feeling from will, gradually becomes incapable of deciding and acting, a result illustrated by the history of Coleridge and other "dreamers." I read a story of a Russian lady which will illustrate this: She went to the theater and wept freely over the imaginary sufferings portrayed on the stage, while the knowledge that her coachman was shivering in the cold on the outside waiting for her, did not cause the faintest suggestion of pity.

But the feelings, in turn, exercise a powerful influence on the imagination. Tell me the character of the images that habitually pass through your mind, and I will tell you what you like. As you can tell the tastes of a gourmand by noticing what he eats, so you can determine a man's likes and dislikes by knowing the images upon which

he habitually dwells. This explains the very great influences of the feelings on belief. Our beliefs follow from the facts before our minds, and the facts before our minds are those it gives us pleasure to think of.

From this it follows that the exercise of the imagination may be attended with very grave intellectual results.

The desire to imagine pleasant things may be stronger than the desire to imagine things that are true. All men of strong prejudices are examples of this. They are so anxious to believe a particular thing—find so much pleasure in picturing it in their imagination and thinking of it as real—that they will not fairly consider the arguments that make against their favorite theory. Sully gives an excellent illustration of that. “If a child,” he says, “is powerfully affected by the pathetic aspect of an historical incident, as the execution of Mary of Scotland, his mind, fascinated by this aspect of the event, will be unfitted to imagine fully and impartially all the essential circumstances of the case, so as to arrive at a complete grasp and understanding of the whole.” Why unfitted? Because, if the child is made to

pity her, he will not give due weight to those facts which point in the direction of her guilt, simply because there is a pleasure in pity, and this pleasure would be gone if he thought of her as a bad woman, because in that case he would cease to pity her.

I have been calling your attention to the fact that feeling depends to a greater or less extent on the exercise of the imagination and the same activity of the imagination, in turn, on the feelings. I hope it has occurred to you that I have only been saying in a more definite way what I called your attention to some time ago when I was talking to you of the interdependence of knowing, feeling and willing.

And I only repeat a fact to which I called your attention at the same time when I say that when you will to do this or that, it often depends upon constructive imagination. Men do rash things, foolish things, because they do not clearly realize the consequences of their conduct. Help a boy to form the habit of clearly and fully realizing the probable consequences of his conduct, help him to realize that the consequences of our acts depend not upon our wishes, but upon the nature of our

acts, and you have gone a long way toward giving him the power and the habit of willing intelligently.

LIST OF QUESTIONS.

1. What is the sense in which the word imagination is used in ordinary conversation?
2. What is meant by learning things by discovery?
3. Show by illustrations that when we learn anything by discovery we use the constructive imagination.
4. Show that we exercise constructive imagination for the gratification of the feelings.
5. Illustrate the moral dangers of uncontrolled imagination.
6. Illustrate the intellectual dangers of uncontrolled imagination.
7. What is meant by the interdependence of knowing, feeling and willing?
8. What has that to do with this lesson?

LESSON XX.

CONCEPTION.



IN the last lesson, I endeavored to show the relation of constructive imagination to knowing, feeling and willing. I pointed out the fact that in order to acquire knowledge, constructive imagination must frame ideas corresponding to those in the mind of the writer or speaker when he uses the words through which we acquire knowledge; that in order to discover things for ourselves, we must frame ideas by constructive imagination which correspond to the reality we are trying to discover. I tried to show also that constructive imagination plays an important part in the life of the feelings, that what we imagine has a great deal to do with what we feel; and what we feel, in turn, with what we imagine. I pointed out the fact also that the relation between the imagination and the will is just as close. Not only is it true, as I said in the last lesson, that what we will depends on the imagination, but when the will undertakes to do the bidding of the

desires, so to speak, it depends at every step upon the activity of the imagination. From the boy's rabbit trap to the telephone of the inventor, every machine first exists in the mind of its maker as an idea or group of ideas which are products of the constructive imagination.

I hope, then, that it is entirely clear that the opinion too often held — that the imagination is a faculty which teachers may ignore — is fundamentally false. You must take it into account at every step in your teaching if you expect to succeed. You must see to it that the constructive imagination whose activity you must constantly call into play, has the necessary materials to work with. Before you expect the little folks to attach any correct ideas to numbers that express long distances, to such words as nation, government, monarchy, despotism, you must see to it that they have the materials out of which these ideas are to be formed. But that is not all. In the lesson on knowing, feeling and willing, I think I called your attention to the important practical bearings of the fact, that knowing depends on feeling. I said that what coal is to an engine, and wind to a sailing-vessel, that motives — feelings — are to that activity

of the mind we call knowing. I remind you of it here because imagination is a form of knowing, and for that reason all that I said about the importance of supplying motives of the right sort to your pupils if you wish them to know, applies here. If, then, you expect to set the constructive imagination of your pupils to work, it is not enough for you to see that it has the proper materials to work with, you must *interest* your pupils so that they may be willing to make the necessary exertions.

One other condition should be observed: the demands made upon the constructive imagination should be carefully adjusted to its development. The intelligent mother will not wait until her child starts to school to begin the cultivation of his imagination. She will begin to train his imagination at a very early age — by the time he is two years old — telling him short stories about the dog and cat and the chickens — stories that consist of two or three short sentences, gradually lengthening them, as he grows older, and introducing a larger and larger number of subjects as the sphere of his knowledge and interests widens. She will exercise his invention by encouraging him to tell stories,

and when at the age of six he starts to school, you should immediately begin your work of training the imagination. In connection with training in the use of language, the pupil may be encouraged to give accounts of what he has seen on the way to school. This, you will note, will exercise his powers of observation as well as his imagination. You should tell him short historical stories—stories about Indians, their wigwams, their amusements, their manner of life generally, so far as it is within the range of the child's interests and powers of comprehension, stories about the Puritans and the Cavaliers, dwelling much on such differences between them as the children can comprehend, such as differences in dress, amusements, and so on. And the children should not only be encouraged to reproduce these stories—which could be used as a language lesson as well as a lesson in history and a means of cultivating the imagination, but they should be encouraged to make up stories of their own on the basis of a picture, for example—and thus strengthen their constructive imagination on the active side.

I hope it is not necessary to point out what excellent opportunities geography offers in this di-

rection. In all your geographical teaching your aim should be to form clear and definite pictures of the countries they are studying in the minds of your pupils. "If you were standing at such and such a point and should look in such and such a direction, what would you see?" is an example of questions you should be constantly asking in geography. Such questions will fix in the minds of your pupils the fact that one of the things for which they are studying geography is to get a definite picture of the world they are studying in their minds, and their answers will enable you to realize whether they have done it.

I pass on now to speak of conception. It is not necessary to use many words in saying that the word "dog" does not mean the same as "this dog." "This dog" may be a long-haired, long-nosed, long-eared black dog with white spots, while "dog" is the name not only of this, but of all dogs whatever. The same is true, of course, of all general names. All general names are names of classes—names which are applicable to every individual of the class—while particular names, such as proper nouns and common nouns, limited by such words as "this" and "that," are names

which can be applied in the same sense to but one individual. If this is clear, I think the definition of conception will be clear. *A conception is that act of the mind which enables us to use general names intelligently.*

All observers of children have noticed that when they begin to talk, they do not use general names intelligently. A child hearing his mother call the dog sometimes Carlo and sometimes dog, uses the two names synonymously. They are both regarded by him as names of the one individual dog. As he gets more experience, he learns that while other animals are called dogs, this one individual alone bears the name of Carlo; and as he comes to note the resemblance between the different animals called dog, he sees that the names are given because of their resemblances. This act of the child—the apprehension of the fact that groups of individuals resemble each other in certain respects, is conception, since from that time the general name is used, not because of the qualities that characterize the individual, but because of the qualities that characterize the class.

We might define conception as that act of the mind which results in a concept. Such a defini-

tion would, of course, throw no light on the nature of conception unless the nature of a concept were understood. I give it here, because if the former definition has made the nature of conception clear, this will help you to understand what a concept is. If conception consists in the apprehension of resemblances between groups of individuals, then a concept is the state of mind which results from conception—in one word, the product of conception.

The two mental facts with which you are most likely to confuse concept, are percept and image. A percept, you remember, is that state of mind which directly results from the perception of an object. When you are looking at an orange, the idea of the orange which arises in your mind is a percept. When you are thinking of some one particular orange, the idea in your mind is an image. When you are thinking of the class orange, of oranges in general, the idea in your mind is a concept.

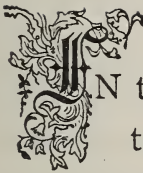
LIST OF QUESTIONS.

1. Why is it important for the teacher to understand the conditions of constructive imagination?

2. What are the conditions of constructive imagination?
3. How would you train the imagination in teaching history?
4. How in teaching geography?
5. Define conception.
6. Explain your definition.
7. What is the difference between a percept, an image, and a concept?

LESSON XXI.

CONCEPTION.

N the last lesson I said that a conception is that act of the mind which enables us to use general names intelligently, and that a concept is a product of conception.

Concepts are formed both voluntarily and involuntarily. The first time a child sees a dog he has a percept of him, and when he recollects it he has an image. But as I pointed out in the last lesson, a concept is not to be confused with an image. If he were capable of giving an exact description of the dog he would include in it a number of characteristics that belong to all dogs, for example, that he eats, barks, has four feet, is hairy and so on. But many of his characteristics would be peculiar to that one dog, for example, his particular color, size, and the like. Not until the child sees other dogs will he separate the characteristics that belong to dogs in general from those that belong to this particular dog. When he sees dogs of different colors, sizes, and so on, he will no

longer think that a dog must have a particular color or size, since experience will have taught him that an animal may be a dog without having some one particular color or size. In this way he will form an involuntary concept of dog.

And here I think you can see clearly the difference between an image and a concept. Your idea of any particular dog is an image; your idea of dogs in general is a concept.

But while a concept may be formed involuntarily, such concepts are not very likely to be either distinct or accurate. Concepts are distinct when their various elements are so definitely conceived that they can be stated in words. Thus, I have a distinct concept of glass when I can tell the various qualities that characterize it. Concepts are accurate when they include all the characteristics of the class commonly denoted by the class name and *no others*. In the nature of the case, it is unlikely that involuntary concepts will be either. Unless by a definite exercise of the will, it is very unlikely that a concept will be definite enough to make it possible to state its characteristics in words, or that it will include all those elements denoted by the class name and exclude all others.

When children first start to school, unless they have been carefully instructed at home, nearly all their concepts are involuntary. They have observed the objects they see about them closely enough to learn their names, and so talk about them with a certain degree of intelligence. And because they can apply their names correctly, teachers are in great danger of thinking that the corresponding concepts are all that they need to be. But that is a mistake. "While an external object may be viewed by thousands in common," said Professor S. S. Green, the idea or image of it addresses itself only to the individual consciousness. My idea or image of it is mine alone—the reward of careless observation, if imperfect; of attentive, careful, and varied observation, if correct. Between mine and yours a great gulf is fixed. No man can pass from mine to yours, or from yours to mine. *Neither in any proper sense of the term can mine be conveyed to you. Words do not convey thoughts; they are not the vehicles of thoughts in any true sense of that term. A word is simply a common symbol which each associates with his own idea or image.*

"Neither can I compare mine with yours ex-

cept through the mediation of external objects. And then how do I know that they are alike; that a measure called a foot, for instance, seems as long to you as to me? My idea of a new object which you and I observe together may be very imperfect. By it, I may attribute to the object what does not belong to it, take from it what does, distort its form, or otherwise pervert it. Suppose, now, at the time of observation we agree upon a *word* as a *sign* or *symbol* for the object or the idea of it. The object is withdrawn; the idea only remains—imperfect, in my case; complete and vivid in yours. The sign is employed. Does it bring back the original object? By no means. Does it convey my idea to your mind? Nothing of the kind; you would be disgusted with the shapeless image. Does it convey yours to me? No; I should be delighted at the sight. What does it effect? *It becomes the occasion for each to call up his own image.* Does each now contemplate the same thing? What multitudes of dissimilar images instantly spring up at the announcement of the same symbol!—dissimilar not because of anything in the *one* source whence they are derived, but because of either an inattentive and

imperfect *observation* of that source, or of some constitutional or habitual defect in the use of the perceptive faculty."

This quotation shows clearly, particularly the italicized sentence, that a child may use the name of an object correctly without having a correct idea of the object. And if that is true it follows as a matter of course that he may use the name of a class of objects without having an accurate concept of the class.

But there is another idea brought out by Professor Green in that paragraph which is quite as deserving of your attention. He says that you cannot convey your idea of an object to your pupils by the mere use of language. When your idea of a nation, for instance, rises before your mind, and you use the word in talking to your class in history, what they will think of will be not the idea in your mind, but the idea which they have associated with the word. That idea may be correct or incorrect, you can only tell which, not by asking them if they understand it, for they may think so when they do not, but by carefully questioning them about it. And if they do not have a correct idea of it, the only way you can be sure of giving

it to them is by bringing their minds into contact with peoples who are nations and peoples who are not, and fixing their attention, by your questions, upon the essential differences between them. For this reason, it is in the highest degree important for you to understand clearly the path which the mind takes in going to clear concepts. What is called imparting knowledge, consists to a considerable extent in occasioning your pupils to form certain concepts in their minds. If the conclusions we have reached are correct, you can do this by describing your own concept only on the supposition that the words used in your description are the signs of exactly the same ideas in their minds as in yours. But this is very unlikely, in many cases, nearly impossible. The only sure way then of leading your pupils to correct concepts is to take them along the path which the mind naturally pursues when it is forming concepts for itself without aid from without. What is this path?

When the child finally came to have such a knowledge of dogs that the word dog called to his mind, not the image of some particular dog, but the concept of the class dogs, how did he get it? Plainly, in the first place, by *comparing* different

dogs. If he had never compared different dogs, if he had never fixed his attention upon two or more of them at the same time, he never would have discovered that some of the characteristics of dogs belong to them as individuals and others, as members of a class.

But more than comparison was necessary. He had not only to fix his attention upon two or more dogs at the same time, he had to withdraw—abstract—his attention from their differences, and put it upon their resemblances. This done, but one more step was necessary to enable him to reach the concept, he had to generalize, he had, in other words, to think of those resemblances as qualities possessed by a class of objects, and then, the resemblance so conceived constituted a concept.

These three processes then—comparison, or the fixing of the attention upon two or more objects at the same time; abstraction, or the withdrawing the attention from the differences and putting it upon the resemblances between the objects attended to; and generalization, or the regarding of the resemblances as the qualities of a class of objects, are the three steps that lead to

the formation of a concept. And if you wish to give to those involuntary and therefore vague concepts of your pupils the definiteness which they ought to have, and if you wish them to form new concepts in a clear and definite way, you will accomplish your purpose not by defining the *names* of concepts, but by taking their minds slowly and carefully through these three processes — abstraction, comparison, and generalization.

But while the formation of simple concepts is possible only as the mind begins with an examination of particulars it is far from being a matter of indifference what kind of particulars it begins with. Bain's remarks on this subject are excellent. He says that particulars should be selected which show all the extreme varieties. A member of one of my classes told me this year that until he was eight years old, he thought all rivers were like the one that ran by his home. His attention had never been called to other varieties of rivers, and so his concept of a river was very incorrect.

Begin also with particulars which give prominence to the main idea. If you are teaching your pupils what an island is, you would do well to call their attention at first to an island far from

the mainland, in order that the characteristic quality of an island, land surrounded by water, may be brought out in great prominence.

And when you are trying to develop a concept select your particulars *solely with reference to that*. If your particulars have an interest in and of themselves, they will be likely to divert the mind and so defeat the object you have in view.


And finally, stick to your purpose until it is accomplished. Accumulate particular after particular until the desired concept is formed, allowing yourself to be tempted into no digression whatever.

LIST OF QUESTIONS.

1. State the two ways in which concepts are formed.
2. Illustrate both, if you can.
3. Show that children may use the names of objects correctly without having correct ideas of them.
4. In what sense is it true that you cannot convey a concept to a pupil by words?
5. Illustrate.
6. Define and illustrate comparison.
7. Define and illustrate abstraction.
8. Define and illustrate generalization.

LESSON XXII.

CONCEPTION.

N the last lesson I said that there are three acts or processes involved in conception — comparison, abstraction, and generalization; that before any one can form a concept he must compare two or more objects — fix his attention upon them at the same time; abstract some quality — withdraw his attention from the qualities in which they are unlike and put it on some quality in which they are alike; and generalize — think of the objects possessing the quality as members of a class. Not until this final stage is reached, until the abstracted quality is considered as the characteristic of a class of objects, is a concept formed. A concept, indeed, is the product that results from regarding some quality as the characteristic of a class.

Possibly you may think I am guilty of an inconsistency. In the twentieth lesson I said that a concept is the product of conception, and that a conception is that act of the mind which enables

us to use general names intelligently. Here I say that a concept is the product that results from regarding some quality as the characteristic of a class. But in truth there is no inconsistency. Not until some quality is regarded as the characteristic of a class can we use general names intelligently. Words used intelligently are used as the signs of ideas. General names are the signs of ideas of classes of objects. But what is the idea of a class of objects except an idea of a characteristic which every member of the class must possess in order to be a member of it? When, then, I say that a concept is the result of that act of the mind which enables us to use general names intelligently, in effect, I say that it is the product that results from regarding some quality as the characteristic of a class, since I cannot use general names intelligently without regarding a quality or group of qualities as the characteristic of the class of objects which the general name denotes.

If this is so, when should we teach our pupils general names? Evidently not until they need them. Language serves two purposes. In the first place, it enables us to preserve the results of our own thinking. When we have performed

these processes of comparison, abstraction, and generalization — when, in a word, we have developed a concept — if we did not give our concept a name, we might lose the results of our thinking. When we associate — mechanically, of course — a name with the concept, the name enables us to recall our concept, without repeating the labor of comparison, abstraction, and generalization, which enabled us to form it, in the first place. Plainly, then, so far as general names are useful in assisting us to preserve the results of our own thinking we have use for them only when we have formed the concept which we wish to preserve by means of them. And when we consider the other use of language we shall be led to the same conclusion. The other use of language, of course, is to communicate ideas. The phrase “to communicate ideas,” is very misleading. As we saw in the last lesson, no such thing is possible in reality. What you do when you are said to communicate ideas, is to occasion the person to whom you are said to communicate them, to recall ideas and make combinations of ideas similar to those in your own mind. This you are able to do by using a sign or symbol with which he has associated the same

idea you have in your mind when you use it. Evidently, then, language cannot be used to communicate ideas, or rather to occasion the recalling of ideas until you have yourself associated a sign or symbol with the idea you wish to be recalled, and until your hearer has formed the same association.

If this is clear, I think you can see the absurdity of teaching words without ideas. Words are like paper money; their value depends on what they stand for. As you would be none the richer for possessing Confederate money to the amount of a million of dollars—because it can not be converted into gold and silver—so your pupils would be none the wiser for being able to repeat book after book by heart, unless the words were the signs of ideas in their minds. *Words without ideas are an irredeemable paper currency.*

It is the practical recognition of this truth which has revolutionized the best schools of the country within the last quarter of a century. Pestalozzi said that, "A man who has only word-wisdom, is less susceptible to truth than a savage. The use of mere words produces men who believe they have reached the goal, because their whole

life has been spent in talking about it, but who never ran toward it, because no motive impelled them to make the effort; hence, I come to the conviction that the fundamental error — the blind use of words in matters of instruction — must be extirpated before it is possible to resuscitate life and truth."

"The blind use of words in matters of instruction," Pestalozzi did well to call "the fundamental error." He was not the first educational reformer who insisted on it. Montaigne, Comenius, Locke, Rousseau, had all insisted on the same idea, but they were in advance of their time; the world was not ready to listen to them. But after Prussia was thoroughly beaten by Napoleon at the battle of Jena, in 1806, when her capital city was in the hands of her conqueror, and she lay humiliated at his feet, it occurred to some of her leading men that the regeneration of the nation was to be sought in education. In this way it happened that the ideas of Pestalozzi were embodied in the schools of Germany, from which country they have gone into the schools of every civilized country in the world.*

* It is to me a very interesting fact that Pestalozzi went to Paris

In what did the reform inaugurated by Pestalozzi consist? *In the substitution of the intelligent for the blind use of words.* He reversed the educational engine. Before his time, teachers expected their pupils to go from words to ideas; he taught them to go from ideas to words. He brought out the fact upon which I have been insisting — that words are utterly powerless to create ideas, that all they can do is to help the pupil to recall and combine ideas already formed. With Pestalozzi, therefore, and with those who have been imbued with his theories, the important matter is *the forming of clear and definite ideas.*

But how can such ideas be formed? By comparison, abstraction and generalization, and by combining concepts so formed into complex concepts. And that explains why Pestalozzian teachers have made so much use of object lessons. Realizing that the only way the mind can form ideas of objects is by comparing them, then ab-

early in this century in order to try to induce Napoleon to reform the educational system of France in accordance with his ideas. Napoleon said he had no time to bother his head with questions of A, B, C. Prussia took the time, and the result was that when Prussia and France met again on the field of battle nearly seventy years later, the soldiers of Prussia, educated in accordance with Pestalozzi's ideas, completely routed the armies of France.

stracting some quality, then generalizing it, they have given systematic courses of Object Lessons in order that they might develop clear and definite concepts of objects in the minds of their pupils.

But systematic object teaching is not the only or indeed the chief way of teaching in harmony with this law of the mind. Object teaching will be the method chiefly employed by intelligent primary teachers, because the great intellectual need of young children is clear and definite concepts of *objects*. Since all our concepts are either simple or complex, and since, of course, simple concepts must precede complex concepts, evidently the first step in education should consist in furnishing the mind with a stock of simple concepts. And since the mind of a child is for the most part employed with objects, since his interests lead him to direct his attention to the external world, plainly the thing to be done is to give him simple concepts of *objects*. But whatever the subject of thought, in order to get its simple concepts the mind must take the same path, pursue the same course, compare, abstract, generalize.

Whatever the nature of the facts studied, whether objects which can be brought into the rec-

itation room, or objects which are physically inaccessible, or facts which cannot be correctly described as objects, such as the facts of history, mental facts, mathematical facts, the intelligent teacher will lead his pupils to begin with an examination and comparison of them, then go on to note their resemblances and differences, then to make generalizations, unless he is sure that they have a stock of perfectly definite, simple concepts, by the combination of which they can form the complex concepts he desires. Such a method of teaching has well been called the Objective Method or Objective Teaching, since it is an application of the method of teaching by Object Lessons to every department of instruction.

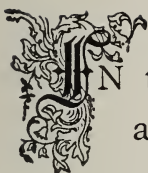
LIST OF QUESTIONS.

1. Define comparison, abstraction, and generalization.
2. Give the definition of a concept in to-day's lesson.
3. Show that there is no inconsistency between this and the one given in a previous lesson.
4. State the two uses of language.

5. Explain the sentence, words without ideas are an irredeemable paper currency.
6. What do you think Pestalozzi meant by the blind use of words?
7. In what did the reform inaugurated by Pestalozzi consist?
8. Explain the Objective Method of teaching.

LESSON XXIII.

CONCEPTION.

N the last lesson I said that the reform inaugurated by Pestalozzi consisted in the substitution of the intelligent for the blind use of words, and I gave a brief description of the Objective Method of teaching—the method upon which Pestalozzians mainly rely to effect this substitution.

The very great importance of this method inclines me to think that it would be wise for you to spend a little more time in making an effort to get such a comprehension of it as will enable you to use it in your work in teaching from day to day. And I do not know how I can bring the subject before you more clearly than by making further quotations from the author from whom I quoted in the last lesson, Professor S. S. Green. The method of teaching by object lessons, the Objective Method, he says, “is that which takes into account the whole realm of Nature and Art so far as the child has examined it, assumes as known only

what the child knows—not what the teacher knows—and works from the well known to the obscurely known, and so onward and upward until the learner can enter the fields of science or abstract thought. It is that which develops the abstract from the concrete—which develops the *idea* then gives the *term*. It is that which appeals to the intelligence of the child, and that through the senses until clear and vivid concepts are formed, and then uses these concepts as something *real* and *vital*. It is that which follows Nature's order—the thing, the concept, the word; so that when this order is reversed,—the word, the concept, the thing,—the chain of connection shall not be broken. The word shall instantly occasion the concept, and the concept shall be accompanied with the firm conviction of a corresponding external reality. It is that which insists upon something besides mere empty verbal expressions in every school exercise,—in other words, expression and thought in place of expression and no thought.

It is that which makes the school a place where the child comes in contact with *realities* just such as appeal to his common sense as when he roamed at pleasure in the fields,—and not a

place for irksome idleness. It is that which relieves a child's task only by making it *intelligible* and *possible*, not by taking the burden from him. It bids him examine for himself, discriminate for himself, and express for himself,— the teacher, the while, standing by to give hints and suggestions — not to relieve the labor. In short, it is that which addresses itself directly to the eye external or internal, which summons to its aid things present, or things absent, things past or things to come and bids them yield the lessons which they infold,— which deals with actual existence and not with empty dreams — a living *realism* and not a fossil *dogmatism*.

It will aid any teacher in correcting dogmatic tendencies by enlivening his lessons and giving zest to his instructions. He will draw from the heavens above and from the earth beneath, or from the waters under the earth, from the world without and the world within. He will not measure his lessons by pages nor progress by fluency of utterance. He will dwell in living thought, surrounded by living thinkers, leaving at every point the impress of an objective and a subjective reality. To him, an exercise in geography will not be a

stupid verbatim recitation of descriptive paragraphs, but a stretching out of the mental vision to see in living picture, ocean and continent, mountain and valley, river and lake, not on a level plain, but rounded up to conform to the curvature of a vast globe. The description of a prairie on fire, by the aid of the imagination, will be wrought up into a brilliant object lesson. A reading lesson descriptive of a thunder storm on Mount Washington will be something more than a mere conformity to the rules of the elocutionist. It will be accompanied by a concept wrought into the child's mind, outstripped in grandeur only by the scene itself. The mind's eye will see the old mountain itself with its surroundings of gorge and cliff, of woodland and barren rock, of deep ravine and craggy peak. It will see the majestic thunder cloud moving up, with its snow-white summits resting on wall as black as midnight darkness. The ear will almost hear the peals of muttering thunder as they reverberate from hill to hill."

This long extract is worth all the study you can find time to put upon it. A thorough comprehension of it and the practical appreciation of it will revolutionize your methods of teaching as com-

pletely as have been the methods of teaching in the best schools of the country in the last twenty-five years. But there are two or three sentences in it to which I wish particularly to call your attention. Professor Green says that the Objective Method appeals to the intelligence of the child *through the senses until clear and vivid concepts are formed, and then uses these concepts as something real and vital*. What does he mean by that?

I said in your last lesson that whatever the nature of the facts studied, whether objects which can be brought into the recitation room, such as coal, glass, water, and the like, or objects which are physically inaccessible, such as are studied in geography and astronomy, or facts which can not be correctly described as objects, such as mental facts, historical facts, and the like, the Objective Method of teaching leads the pupil to begin with an examination of the facts; instead of beginning with inferences *about* the facts, it puts the pupil face to face with the facts, and leads him to make his own inferences. How is that possible when we are not dealing with objects in the immediate presence of the pupil?

I hinted at the answer to that question in the last lesson.

When we are dealing with facts or objects which our pupils can not observe for themselves at first hand, we must develop in their minds as nearly as we can, the same vivid concept that would result from a careful observation of the reality. That is what Professor Green has in mind in the sentence to which I have called your attention. A concept so vivid as to be something real and vital, is a concept which can be used by the constructive imagination in forming in the mind complex concepts of things only a little less vivid than would result from a first hand observation of the reality. And he has in mind the same idea when he says that the Objective Method takes into the account the whole realm of Nature and Art so far as the child has examined it; assumes as known only what the child knows—not what the teacher knows. For so long as the teacher keeps within the child's knowledge, he presents to him simple concepts which he can combine into complex concepts, and thus clearly and vividly realize facts and realities which are beyond the range of his observation, but which he can compare and abstract and generalize from, as though he had seen them at first hand.

When Professor Green says that the Objective Method addresses itself to the eye external or internal, he means to call attention to the fact that there are realities which cannot be cognized by the senses, such as mental facts, but which nevertheless are to be studied in the same way.

I think this lesson will enable you to see that one of the favorite doctrines of current pedagogy—first the idea, then the word—is inaccurate. In primary instruction it does indeed state with great accuracy the proper method of proceeding for the most part. But even here the teacher must sometimes violate it. No primary teacher can always confine himself to objects which have sometimes been within the range of the pupil's observation. He must sometimes take concepts formed from actual observation and build out of them concepts of realities which the pupil has never seen. A more accurate statement is—first, the reality, then the play of the mind about the reality. But that last clause needs explanation which I will try to give in another lesson.

LIST OF QUESTIONS.

1. In what did the reform inaugurated by Pestalozzi consist?

2. Why should we take into account in our teaching, the whole realm of Nature and Art, so far as it is known to the child?

3. Why must we first appeal to the intelligence of the child through the senses?

4. What is meant when it is said that the Objective Method addresses itself to the internal eye?

5. Show that the dictum — first, the idea, then the word — is inaccurate.


6. Why is it more true of primary instruction than of any other?

7. State your idea of — “First, the reality, then the play of the mind about the reality.”

8. What is constructive imagination?

LESSON XXIV.

CONCEPTION.

N the last lesson, I said that one of the favorite dictums of current Pedagogy—first, the idea, and then the word—is misleading and inaccurate; because, in many instances, you have to employ words in order to get the idea before the minds of your pupils. For this maxim I suggested the following as a substitute: First, the reality, and then the play of the mind about the reality. I suggested the somewhat indefinite phrase—play of the mind—because a more definite expression would not be sufficiently comprehensive. In some cases, what you want of your pupils is not primarily intellectual action, or action of the knowing side of the mind at all. You wish to bring their mind face to face with a certain reality in order to excite the appropriate feelings. That, for instance, would be the object of an intelligent teacher in teaching such a reading-lesson as the one described in the last lesson. And the same is true, for the most part, in all

teaching of literature. You wish to get the thoughts and sentiments of the piece in the minds of your pupils in order that they may have the proper feelings—appreciation, admiration, and the like. In such cases in the maxim: First, the reality, and then the play of the mind about the reality—"the play of the mind" means a certain activity of the emotional side of the mind.

But even where the play of the mind you seek to occasion is intellectual, the kinds of intellectual activity which the Objective Method aims at are so different in different circumstances that any very definite term will not accurately describe them. In a first lesson on verbs, for instance, you might begin by asking the children to clap their hands, then ask them to tell you some other things that they could do. And when they had given you a good many examples, such as walk, skip, jump, hop, run play, fight, bite, eat, drink, and so on, you might tell them that such words are called verbs. In such a case you would have first given the idea of action by making them think of a number of kinds of action, and after giving them the idea you would have fixed it in their minds by giving them

its symbol, verb. All this is in strict conformity with the Objective Method. After comparing all those different kinds of action, and abstracting from their differences, you hope that they will generalize the quality of action, and to help them to do this, you tell them that all such words are called verbs. But now you want them to know the definition of verb. How will you teach it? Will you say: "Children, you notice that all these words express action, and as they are all verbs, you see that a verb is a word that expresses action. So I want you to write this sentence on your slates and learn it by heart for the next recitation: A verb is a word that expresses action." That is one way of teaching the definition of a verb, but that is not the correct way; it is not in accordance with the Objective Method. To use the Objective Method you would begin something in this way: "Children, I have just told you that all these words are verbs; now, can you tell me what a verb is?" Possibly, some little fellow would be most impressed by the idea of the action they had actually performed, and if so, he might say: "A verb is something you do with your hands," instead of saying, "that is not so," it would be better to get the class

to repeat the other examples of verbs you had given them, and when one of them said that "jump" is a verb, you would call the attention of the first little fellow to the fact that you do not jump with your hands, and in this way, as I think you see, you could lead them step by step to make a definition for themselves. In so doing, you would be giving another example of the Objective Method. In the first case you used it to develop the idea expressed by the word verb; in the second, to get a definition of the word that expresses the idea you had tried to develop in their minds. In these two cases the phrase, play of the mind about the reality means two quite different things, though in both it describes a certain activity of the intellectual or knowing side of the mind.

In the following example which I take from history it means something different still. Your class learns from you or a book — so far as the Objective Method goes it makes no difference which — that the constitution of the United States forbade Congress to pass any law prohibiting the importation of slaves prior to 1808, and then they learn that Congress passed such laws in 1808 — in other words, just as soon as the constitution made

it possible for them to do it — unanimously. You ask your class what they would infer from that? They will be likely to say that it indicates that Congress wanted to do all it could to limit slavery. Without saying whether they are mistaken or not, you go on and tell them of the penalty Congress affixed to the violation of the law, and then call their attention to the fact that although the law was constantly violated and every body knew it, this penalty was very rarely inflicted, and then ask what that signifies. What you are asking for, you see, is an inference from certain facts. Here the reality is a historical fact, and the play of the mind about the reality which you are seeking to occasion is an inference based on the reality.

In the following example “the play of the mind” means something different still. You are giving a lesson on fractions, I will suppose. You want them to see that in order to add fractions which have like denominators, they have simply to add the numerators. You give a boy one-sixth of an apple and tell him to write the symbol that expresses that on the board; then you give him two-sixths, and then three-sixths, in each case, requiring him to write the symbol on the

board. Then you ask him how many sixths he has and he will be likely to say—six. Then you ask him to tell you what he has done and he will tell you, or by judicious questioning you can get him to tell you, that he has added three, two and one. “But what are three, two and one?” “Numerators,” he will tell you if the right kind of teaching has preceded this lesson. “Then what have you done?” “I have added the numerators together.” What then must you do in order to add fractions? “Add their numerators together.” Here, the play of the mind wanted is a description of a process. The reality with which you bring his mind into contact is a process, the correctness of which he is able to see by the exercise of his own powers, and after seeing, so to speak, the process, you endeavor to get him so to reflect upon it as to make a correct description of it.

I have tried to explain the Objective Method at such length, because, as I think, I have said already, I regard it as the most important principle in Pedagogy, so far, at least, as that science relates to the training of the intellect. To have a clear comprehension of the Objective Method, and to apply it rigidly in all departments of your

school, would be to revolutionize your methods of teaching, unless, indeed, your methods are already the best.

But even when you have the clearest possible comprehension of it, you may fail in your attempts to apply it, because you try to bring the minds of your pupils into contact with realities which they cannot comprehend—try, in other words, to bring their minds into contact with realities with which they cannot be brought into contact in their state of development. You see, of course, that you could not give a blind boy an object lesson based on the sense of sight. No more can you intelligently use the Objective Method when the realities are beyond the range of your pupil's comprehension.

Further, it must be borne in mind that the Objective Method* is not the best method to use when your aim is to communicate information. But so far as you aim to supply to the minds of

*It doubtless has not escaped the attention of my careful readers that the Objective Method is based in part on laws of the mind, which we have not yet considered. Those laws, however, are so generally known that I thought it would conduce to clearness to assume that they would be known, and discuss the Objective Method in connection with Object teaching, which is but a single application of it.

your pupils the conditions of development, so far, in one word, as your aim is the strengthening and unfolding of all their powers, so far you should aim to use the Objective Method.

LIST OF QUESTIONS.

1. I say in this lesson that "the play of the mind about the reality" sometimes means a certain action of the emotional side of the mind. Explain.

2. Give illustrations of it, based on your experience in teaching.

3. State and explain and illustrate all the different senses in which, as I have shown in the lesson, the phrase may be used.

4. What are the two ends of education?

5. Show that you may understand the Objective Method and fail in your attempt to apply it.

6. When is the Objective Method inapplicable?

LESSON XXV.

CONCEPTION.



IN speaking of involuntary concepts, I said that they were not likely to be either distinct or accurate, and by distinct concepts, I explained that I meant those whose elements are represented clearly enough to make it possible for us to state them in words. I said that it is quite possible to be able to recognize a thing without being able to tell how you do it.

This distinction is of so much importance that it is worth while to dwell on it at greater length. What is the explanation of it? How is it possible to recognize a thing without being able to tell *how* you do it? Plainly, there is a great difference between that knowledge of a thing which one has when he knows it when he sees it, and entire ignorance of it: in what does it consist?

Before attempting to answer the question, it should be carefully noted that I am not speaking of things as individuals but as members of classes. I may see a stranger today, and tomorrow, although

I am entirely unable to describe him, I may recognize him when I see him again. In that case, the recognition may be a simple act of memory based on the laws of association. When I see him tomorrow, in accordance with the laws of the association I may recall the fact that I saw him yesterday, and if so, I could correctly describe the facts of my experience by saying that I recognize him as the individual whom I saw yesterday.

But conception, it will be remembered, is that act of the mind which enables us to use general names intelligently, and the question, therefore, which we have to answer is, How is it that we can recognize an individual *the first time we see it* as a member of a given class without being able to tell why we do it? I think the reason is that we have fixed our attention upon the characteristics of the class closely enough to be able to recognize members of it when we see them, but not closely enough to be able to tell why we do it. I have already called your attention to the fact that we may have sensations without knowing that we have them and I believe that sensations are by no means all of the mental facts which we may have without being conscious of them. You undoubtedly have

a motive for everything you do, but if you try to find out what it is in any given case, the chances are that you will not be able to do it. You may indeed by habitual and careful introspection acquire some skill in dragging into consciousness these unconscious mental facts. As a watchmaker can detect minute objects in a watch, that would escape the attention of ordinary people, so a trained psychologist can bring into consciousness mental facts that would hide themselves in the darkness of unconsciousness from the ordinary seeker. But the more you study your own experience, the more certain you will be that to *have* a mental fact and to be conscious that you have it, are two very different things. And you will see that as in the case of our motives so in general, unconscious mental facts may and do exert a very direct and powerful influence on the mental facts of which we are conscious.

Hence, as I think, it comes to pass that we recognize things as members of classes without being able to state the characteristics of the class; we have, as it were, an unconscious knowledge of the characteristics of the class and so know them when we see them. I have said that the case of

which I am speaking is a knowledge of individuals as members of classes, and not of individuals as such. But there is one kind of knowledge of individuals as such that is to be explained in the same way. The older psychologists used to dwell much on the distinction between original and acquired perceptions. I have said nothing about it because I doubt if it exists. I incline to think that all our perceptions are acquired. But whether they all are or not, most of them certainly are; among them, all our perceptions of distance. When you see an object, you at once judge of its distance and within certain limits with entire confidence, but unless you are a trained psychologist you cannot tell why you do it; you draw a very positive inference without being able to state the data! Reach a very positive conclusion without being able to state the premises!

The explanation, as I think, is that the data, the premises are unconscious mental facts.

But whatever the explanation, it is certain that we recognize many objects as members of classes without being able to tell why we do it. It is unnecessary to say that in very many cases we can state many of the characteristics of an object by

means of which we know it. If called upon, for instance, to state why you know that such and such an object is a horse you could give a detailed answer to the question because you are clearly conscious of many of the qualities that distinguish it from all the other animals you have seen.

For the sake of clearness, let us call the first class of concepts, the concepts which we have of objects without being able to tell how or why we do it, *implicit* concepts. We may bring out the contrast between implicit and distinct concepts by calling the latter *explicit*.

It is the difference between these two kinds of concepts, or rather the fact that a concept may be implicit without being explicit, that constitutes the chief, if not the whole, difficulty of analysis and parsing. I once saw quite a number of fairly intelligent students puzzled over this sentence: "The lady grew tall, queenly and beautiful." They were inclined to think that "tall," "queenly," and "beautiful" were adverbs. If they really had interpreted these words as adverbs, they would not have understood the sentence. If they had supposed that the words in question qualified the action instead of the person spoken of their interpre-

tation of the sentence would have been ridiculously incorrect, and the fact that they did understand it, proves that they did not in reality attribute to the words the function of adverbs. If any one in the class had been asked to state what he had learned about the lady in the sentence, he would have said that she was tall, queenly, and beautiful, but in spite of this, many of them said that the words were adverbs. Why? *Because they could not read the facts of their own consciousness.* They had an implicit knowledge of the meaning of the words, but they could not make it explicit.

If your study of Psychology induces you to study the minds of your pupils and the children whom you meet, as carefully as I hope it may, you will learn that there is some truth in the remark which we often laugh at children for making, "I know, but I can not tell." They know when they have implicit concepts; when they not only know, but can tell what they know, they have explicit concepts. A large part of elementary teaching, indeed, consists in helping pupils to transform implicit into explicit concepts. But the process must not be forced. And inasmuch as children can form implicit concepts of

many things long before they can form explicit concepts, you should often be satisfied when you have made yourself sure that they understand you or the book they are reading, without requiring them to state their concepts in words. In teaching young children reading, for example, you should make sure that they know the meaning of all the words in the lesson. But if you try to give yourself this certainty by asking them to *define* the words, you will ask for explicit concepts, and they have not these to give you. You must resort to other methods. You can get them to make up sentences and use the word which you are trying to teach them. You can use the word in different sentences yourself—in some cases correctly and in others incorrectly—and ask them to tell you in which it is used correctly. Such methods imply the possession of only implicit concepts, and therefore are proper in such cases.


If you ask for a rule to enable you to decide when it is proper to ask for explicit concepts, I am obliged to say that I cannot give it to you nor can any one. It is a question for your own tact to answer under the guidance of experience and a careful observation and study of children.

LIST OF QUESTIONS.

1. What is an implicit concept?
2. Give illustrations.
3. What is an explicit concept?
4. Give illustrations.
5. Is there such a thing as unconscious knowledge?
6. Explain your answer.
7. Show how and why pupils often have difficulty with parsing and analysis.
8. What bearing has the distinction between implicit and explicit concepts on the teaching of reading?
9. Is there any difference between implicit and explicit concepts?

LESSON XXVI.

JUDGMENT.

S a conception is that act of the mind which enables us to use general names intelligently, so a judgment is that act of the mind which enables us to use a proposition intelligently. I see a man whom I do not know very well. I am uncertain whether it is John Smith or his brother. As long as I am uncertain, there will be no mental action which can be expressed by the proposition: That man is John Smith.

But as I look at him closely, I notice a scar on his right cheek just under his eye, and then I remember to have heard that John Smith once received a severe wound there. Then my mind passes from its state of doubt into a state of certainty, and that act of my mind is expressed by the proposition: That man is John Smith.

A moment's reflection will enable you to see that such judgments are rendered possible by the laws of association. Through the laws of association I thought of the name of John Smith and of the

name of his brother in the supposed case. But there is a wide difference between the judgment and the simple result of the laws of association. As long as my mental state is due simply to the laws of association, I have a percept and two concepts in mind, the percept of the man and the concepts of John Smith and his brother. But when I have formed a judgment, the percept and the concept of John Smith are fused into one, and, expressing this, I say: "This man is John Smith," which is only another way of saying "this man and John Smith are the same."

The judgment is the mental act and the proposition is the sentence in which we express the judgment.

Just as there are concepts which we cannot describe in words, so there are judgments which are not stated in propositions as we think them, and which cannot be so stated without ceasing to be implicit and becoming explicit, since we mean by implicit judgment one that is not stated in words.

Inasmuch as with the exception of such propositions as Tully is Cicero, the subject or predicate or both is a concept, it is evident that explicit

judgments are not formed until after concepts are developed. But this is not true of implicit judgment; in order that the processes of comparison, abstraction and generalization, which result in a concept may take place, there must be implicit judgments.

The best way for you to realize the truth of this is to carefully examine the facts of your own experience. If you do, I think you will find that judgment, the process of bringing things together in the relation of subject and predicate, is the *unit of all mental action*. Certainly you cannot state what the mind does when it compares things except in some such forms as these: "I see and think of two or more things;" "these things are similar to each other," which propositions, of course, express judgments. If that is not a correct account of what takes place in your mind when you compare things, you can blot out the subject, so to speak, and have something intelligible left. Let us try it and see. Taking the first sentence and blotting out the subject, we have left something like this: "There is a thought of two or more things at the same time." But does that really mean anything unless it is understood that this thought is in *some*

one's mind? It is not necessary to state the words which I have italicized because when you see or hear such a sentence as the above you immediately supply it in order to make it intelligible. But the sentence, "Some one is thinking of two or more things at the same time expresses a judgment."

Take the second sentence, "These resemble each other," and if you blot out the subject you have left only "resembling things." But is it not clear that those words, if they have any meaning whatever, mean precisely the same thing as the sentence of which they are an abbreviation? Is it not evident that if they have any meaning to you it is because you use them *to express an affirmation or denial?* You say to me, "Resembling things," and I say: "Well, what about them." Do you mean that you like them or dislike them; that they exist or do not exist? If you reply: "I do not say anything about them," I think it is evident that the words express no mental action. Perhaps you will remind me that when children first begin to talk they do not use sentences, but single words, as dog, cat, bread, and the like. True, but although they speak single words, they think sentences. When a child says "dog," he means

"I see a dog," or "There goes a dog." When he says "bottle" or "bread," he means, "I want my bottle," "Give me bread."

What we have just seen to be true of comparison, is equally true of abstraction. Abstraction, it will be remembered, is that act of the mind in which we withdraw our attention from the unlike qualities of objects, and put it on those which are alike. But what help would the process be in the way of forming a concept if we did not think that the qualities abstracted belonged to the objects. In other words, if the action of our minds could not be described by some such words as these, "those objects have such and such like qualities," how could the process help us to form a concept of objects resembling each other in such and such particulars? Evidently, it could not do it all. Only as the process of abstraction is a process of thinking that the objects considered have like qualities, only, in other words, as it is a process of judging, is it a step on the road that terminates in a conception.

And the same is true of generalization. What is generalization? It is the process of thinking of the qualities abstracted as the basis of a class. We

compare two or more objects — put our attention on them at the same time — then abstract — fix our attention on one or more points in which they are alike, then generalize — think of all the objects which do or may possess these qualities as members of a class. What could that process mean if we thought of qualities without thinking of the objects to which they belong? Evidently nothing. Inasmuch as generalization is the terminus of the road that leads to concepts, and inasmuch as a concept is the thought of a class of objects, which resemble each other in certain particulars, evidently unless the act of generalization is an act in which we think of the qualities as belonging to objects, it is of no use in the way of helping us to form concepts.

I am very much afraid you will find this rather abstract. But if you can bring yourself to study carefully and attentively the facts of your own experience, it will give you no trouble. You will then see for yourself how meaningless and unintelligible anything must be that is not thought of under the form of a judgment. "The sun," "the railroad," "the newspaper" — do these words express thoughts? What have you *said*? Affirm

or deny something of these subjects and you have thought something; until then, they signify nothing.

I do not wish to be understood as maintaining that our mental life begins with judgments. When I say that judging is the unit of mental action, I mean that all thought is a process of bringing subjects and predicates into relation with each other. I believe that our mental life begins with sensations — sensations which contain no hint, so to speak, of a self as experiencing them, because they are not elements of judgments, either implicit or explicit. Sometime in the course of the child's experience it begins to *think* its sensations, begins to use them as the subject or predicate of a judgment, and *then* thought begins. If you ask *why* it begins to think its sensations, I am obliged to say I do not know, and I do not think any one does. All that can be said about it in the present state of our knowledge — all that we shall ever be able to say about it — is that it is so.

We have seen already that there are two kinds of judgments, affirmative or those that affirm the subject of the predicate, and negative or those that deny it.

There are, also, two kinds of affirmative, and two kind of negative judgments.

When we say, "All men are mortal," "No men are perfect," we are talking in each case about the whole class of men. But when we say, "Some men are proud." "Some men are not rich," we are talking about only a part of the class; The first kind of judgments called universal, or those in which the subject of the proposition is the whole class; the second is particular, or those in which the subject is a part of the class.

Judgments are due to different causes. Often you are undecided about a matter for a long time and only *make up your mind*, reach a judgment after a careful consideration of a great many facts. In such cases the judgment is plainly the result of a process of reasoning. Sometimes the judgment seems to be instantaneous, when it is likewise the result of a process of reasoning. All those cases of acquired perception, so called, are undoubtedly of that kind. Sometimes they are not the result of a process of reasoning at all, but are intuitive, as when we think "two straight lines cannot inclose a space."

LIST OF QUESTIONS.

1. What is an implicit judgment?
2. Give illustrations.
3. Show that comparison, abstraction, and generalization involve implicit judgments.
4. What is meant by unit of mental action?
5. State and explain the various kinds of judgments.
6. What is an intuition?

LESSON XXVII.

REASONING.



WE have seen that a judgment is that act of the mind which enables us to use propositions intelligently, and that they are due to a variety of causes, among others, to processes of reasoning. When we say that such and such a man is a man of good judgment, we have in mind judgments due to processes of reasoning. By a man of good judgment, we mean a man whose decisions, judgments, are generally wise; that is, in accordance with the facts. We go to such a man for advice; we tell him what we wish to do, and all the circumstances in the case, and he considers them and says: "I'll tell you what I would do"—and then he goes on to tell us the decision, conclusion, judgment at which he has arrived. Sometimes he hesitates before giving any advice, saying: "I do not know what to think is best"—because he has formed no judgment. But when he forms a judgment, it is based on the facts we have told him. If he could give a correct descrip-

tion of his mental processes, it would be in some such language as this: In view of this and that and the other fact, I think this is true, or that is best.

Hence, I say that such judgments are due to processes of reasoning. For what is reasoning? *It is that act of the mind by which we go from the known to the unknown.*

I have told you already that besides mental facts, the facts of which we are directly conscious, I think there is another class of self-evident facts, intuitions, truths, in other words, which we know without any process of reasoning. But excepting these two, mental facts and intuitions, everything else which we know or believe, we believe because of processes of reasoning. All that a child learns from its mother it learns by a process of reasoning. If his mental processes in such cases were fully set forth in words, we should have to use some such language as this: "What my mother tells me is true." "She says that that is a dog." "Therefore, it is a dog."

I say if his mental processes were fully described, of course the child cannot do that. For just as there are implicit concepts, ideas of classes

of objects when we cannot state the qualities common to the members of the class by means of which we actually recognize an object as belonging to it, and implicit judgments, acts of the mind in which subjects and predicates are brought into the relation of a judgment although we do not state the judgment in words, so there are acts of implicit reasoning, processes in which the mind passes from certain facts assumed as known called premises to certain things which it assumes to be facts called conclusions.

It would seem that the mind ought to be conscious of its own acts and that therefore we ought to know the facts which cause us to believe this or that, but in the majority of cases very few people do. If you doubt it, suppose you begin to experiment upon yourself; suppose you ask yourself why you believe this or that. Doubtless you can often tell, but unless I am mistaken, it will often happen that you cannot, because the processes of reasoning which lead you to believe it are implicit.

I have already pointed out what I regard as the explanation of the fact that we often can not. I think the explanation is found in the circumstance

that the mind is often unconscious of its own operations. But whether you accept this explanation of the fact or not, the fact itself is indisputable.

If you clearly realize the definition of reasoning, you will see that you are reasoning every moment of your life when you are awake. You awake in the morning and glance at the clock to see what time it is. You know that the object you are looking at is a clock by a process of reasoning. It looks thus and so, and therefore you say it is a clock. You say that it is half-past six, and therefore you must get up. You infer that that is the correct time, because you have found your clock reliable in the past, and when the hands have been in the position they now are, you have learned that it was half-past six. You get up and begin to dress—every act which you perform is based on a process of reasoning. There was a time in your life when you could not do this or that simply by willing to do it. The child of two can not button its dress. And when he learns to do it once, he will be able to do it again by an act of reasoning. He will reason—implicitly, of course: I did thus and so yesterday morning when I buttoned my dress, and, therefore, as I wish to button it again,

I will do the same thing again. You go out and sit down to breakfast. Why do you do it? You are reasoning again. You are hungry, and as eating has satisfied your hunger in the past, you think it will do it again. You decline to drink coffee, because you drank it yesterday morning and had a headache, and you reason that the coffee was the cause. Some one comes into the room and you say, "Good morning, Mr. —," naming a friend of yours. How do you know who it is? By an act of reasoning. Your friend looks thus so, and as this gentleman looks the same way, you conclude that he and your friend are the same person. Further than that, you know that he is a person—a living, conscious being like yourself—by an act of reasoning. He acts like a person, and therefore you think he is one. These examples will give you some idea of the part which reasoning plays in our mental life. If you will think for a little, you will see that it is reasoning that gives memory its value. Why is it useful for us to know the past? As a guide to the future. Inasmuch as the past has been thus and so, we *reason* that the same will be true in the future; and without reason we should have and could have no opinion what-

ever of the future. You believe that the sun will rise in the morning simply because it has done so in the past.

I have tried to give you a clear idea of all this because I want you to realize how important it is for you to train the reasoning powers of your pupils correctly. Nearly everything we believe, we believe as I have said because of processes of reasoning. But many of the things which we believe are false because we have reasoned badly. Now since what we do depends to so great an extent on what we believe, and what we believe on how we reason, it follows that the proper cultivation of the reasoning powers is of the very highest importance.

I think it is evident from what I have said that children begin to reason at a very early age. The first time a child recognizes an object it is done through an act of reasoning. For what is the recognition of an object? It is the *re-knowing* of it. And how is that possible? Because the object seen to-day looks exactly like the one seen yesterday — therefore the child thinks they are the same. Every step which a child takes in learning a language, he takes by an act of reasoning.

How, for instance, does the child learn the meaning of the pronoun I? He hears his father and mother and brother and sister each saying I and each meaning a different person by it. Little by little he comes to see that each means himself and he comes to see this by a process of reasoning. And because the word is used in such different senses in the mouths of different persons, it is one of the last words in common use that he comes to understand.

By a similar process he enlarges his knowledge of objects and their properties. At first he knows nothing whatever about them—not even, as I think, that they exist. He is as ready to put his hand into the fire as into water, but little by little he learns the familiar properties of the objects about him. He learns that when he puts his hand on a hot stove he gets burnt. And so he comes to think of hot things as causing pain, and by similar processes he comes to know the familiar properties of the various objects with which he comes in contact.

In the same way he comes to know the causes of many of his experiences. A child will go out of doors on a cold day and cry because of the cold,

and yet be anxious to stay out, because he does not know the cause of his pain. After a little he learns from his mother what the trouble is in such cases, and so, through reasoning again, reasoning that since his mother tells him so it is true, he comes to connect his experience with its cause.

LIST OF QUESTIONS.

1. What is an implicit concept?
2. What is an implicit judgment?
3. What is reasoning?
4. What is implicit reasoning?
5. What are mental facts?
6. What is an intuition?
7. Illustrate the extent to which we reason.

LESSON XXVIII.

REASONING.



IF you will examine carefully any act of explicit reasoning, you will see that it results from a *comparison* of *judgments*. Precisely as an explicit judgment results from a comparison of concepts, or of a concept and a precept, or a concept and an image, so an act of explicit reasoning results from a comparison of judgments. Take such an argument as the following:

“All measures that tend to promote home production are beneficial; A protective tariff does this; Therefore, a protective tariff is beneficial.”

Here plainly the last proposition — called the conclusion, results from a comparison of the judgments expressed in the first two — called the major and minor premises. We see that if all measures that tend to promote home production are beneficial, and that if a protective tariff does this, it must be beneficial.

Take another:

All the horses which I have seen have four

legs; The horses which I have seen are types or examples of all horses; Therefore, all horses have four legs.

Here again the conclusion results from a comparison of the judgments expressed in the major and minor premises

From this it follows that an act of reasoning may be entirely correct and still lead to a false conclusion. If one or both of the judgments from a comparison of which the conclusion results is false, then the conclusion may be false even though it follows from the premises. Take the first of the two above syllogisms—the three propositions which express an act of deductive reasoning, major premise, minor premise, and conclusion, are called a syllogism—as an example. A man may say, “Undoubtedly it is true that a protective tariff is beneficial provided it is true that all measures that tend to promote home productions are beneficial, but I deny that. I hold that what promotes the interests of individuals promotes the interests of nations; and inasmuch as free trade promotes the interests of individuals, therefore it promotes the interests of nations.” Here we have an argument which leads us to a conclusion directly the

reverse of the first. If we state it in syllogistic form I think we shall see that the reasoning is quite as correct as the first. This is the syllogism:

Whatever promotes the interests of individuals promotes the interests of nations. Free trade promotes the interests of individuals; therefore, it promotes the interests of nations.

Here, you see, are two acts of reasoning, both of them entirely correct, and yet leading to contradictory conclusions. The reason, of course, is that the two acts of reasoning are based on different premises—judgments. And here you have an illustration of one of the reasons why arguments avail so little to convince men. Inasmuch as all reasoning is a comparing of judgments and a concluding that something is true in consequence, if I, holding one pair of judgments to be true, compare them, and you a different pair and compare them, in the nature of the case we shall reach different conclusions. Indeed, only in so far as we agree upon something as true is it possible for us to argue with each other intelligently at all. Take the two syllogisms about protective tariff and free trade which we have been considering, and let us say that A holds the first one to be true and B the second.

Before A can convince B, he must first show him that the major-premise, "whatever promotes the interests of individuals promotes the interests of nations," is false, and then that his own major-premise, "All measures that promote home production are beneficial" is true. Until he can do that it is absurd for him to attempt to convince B that a protective tariff is beneficial. On the other hand, before B can convince A he must first show him that the major-premise, "All measures that tend to promote home production are beneficial," is false, and then that his own major-premise, "whatever promotes the interests of individuals promotes the interests of nations," is true.

If you will examine the arguments of able men on some subject in reference to which they differ with each other, you will find that they differ not so much because one — or both — of them reasons incorrectly, as because they base their reasonings on different premises. In the January number of the North American Review, for example, there are two articles — one written by Congressman Reed, now Speaker of the House of Representatives, and defending the rules just adopted by the Republican majority, and the other written

by Senator Carlisle, ex-Speaker of the House, and severely criticizing the same rules. Both arguments are entirely sound, but as they are based on different premises, they lead to contradictory conclusions. Congressman Reed reasons substantially as follows: Whatever rules are necessary to enable the House to transact business are wise; the rules reported by the Republicans are necessary to enable the House to transact business. Therefore they are wise. Senator Carlisle, on the other hand, reasons substantially as follows: Whatever rules enable the Speaker of the House to exercise arbitrary and tyrannical power are unwise. The rules just adopted by the House enable the Speaker to exercise arbitrary and tyrannical power; therefore they are unwise. If you ask how it comes that able men start from different premises since they do not, as a rule, reason incorrectly, you ask a very difficult question. I think, however, as I have already said, that the answer is partly found in the interdependence of knowing, feeling and willing. Men differ in their feelings, and hence they differ in the premises from which they start. In the particular case, for example, every Republican in the House voted in favor of

the Republican rules and every Democrat against them. A few of them, perhaps, voted dishonestly, but I have no doubt that the very great majority voted honestly. How did it come to pass that the Republicans all believed one way—all started from one major-premise, and the Democrats from another? Simply because of a difference in their *interests*—feelings. The Republicans were interested in having their rules adopted, and the Democrats were interested in having them rejected, and inasmuch as what men believe depends on what they attend to, and as what they attend to depends on what they are interested in attending to, their interests exert a very powerful influence on their beliefs.

Almost every page of history furnishes illustrations of this truth.

Every one who has studied the history of Calhoun knows that a great change began to take place in his opinions about the year 1825. Before that time he had been an advocate of a protective tariff, a national bank, internal improvements, a liberal interpretation of the Constitution. About 1825, his opinions on all these questions began to undergo a change, and in a few years he had com-

pletely wheeled about. The explanation is, that about this time he began to see that slavery was the controlling interest of the South, and that the only constitutional weapon with which it could be defended was the doctrine of State rights.

Andrew Jackson's history abounds in illustrations of the influence of men's feelings in determining the major-premises upon which they base their reasoning. No man could be a friend of Andrew Jackson and disagree with him. He was not only a very sincere patriot, but he was sure he was right, and, therefore, that everybody who disagreed with him was wrong. What seemed true to him seemed so self-evident that he could not understand how a man could honestly and honorably differ with him.

The study of the history of men like Alexander Hamilton and Jefferson will give still different illustrations of this truth. Because of natural differences between the things they liked, these men inclined to start from different premises in their political reasoning. Jefferson naturally trusted the people and believed in their political capacity. Hamilton as naturally distrusted them, and with his strong love of order and stability, it was as

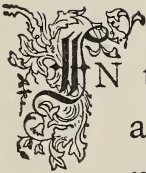
natural for him to believe in a strong government — one strong enough to hold the people in check, as it was for Jefferson to believe in a weak one, because he did not think the people needed much governmental restraint.

LIST OF QUESTIONS.

1. State and illustrate what reasoning is.
2. What is a syllogism?
3. What is a major-premise? A minor premise?
4. Show that good reasoning may lead to a false conclusion.
5. State and illustrate why men start from different premises.

LESSON XXIX.

REASONING.

N the last lesson, I endeavored to show that all reasoning consists in comparing judgments and concluding that something is true in consequence. I pointed out the fact that an act of reasoning may be entirely correct and lead to a false conclusion, because one or both of the judgments on which it is based is false. And hence it happens, as I endeavored to show, that men differ with each other quite as often because they start from different premises as because they reach different conclusions from the same premises.

From this point of view, I think it is clear that there are two things to be done in the training of the reasoning powers of our pupils: (1), to train them to reason correctly from given premises; and (2), to give them such training as will diminish, as much as possible, the influence of personal considerations in selecting the premises upon which they base their reasoning.

If you will read the last lesson carefully, I think you will see what I mean by "the influence of personal considerations." I endeavored to show that one great reason why men differ to such an extent in the premises from which they start, is because of the influence of their feelings. In a word, men believe what they want to believe. And why? Because they give their attention only to those facts which favor what they want to believe, shutting their eyes, more or less consciously, so far as all others are concerned. How to diminish that tendency is certainly one of the most difficult, as it is one of the most important, problems of education. How important it is, you will begin to realize when you remember that all of our rational conduct, I mean everything we do that is not due to mere impulse, is based on what we believe. What we want to believe has a great influence on what we do believe, but it has no influence whatever in determining what is true.

Calhoun and the South wanted to believe that slavery was right, and they did, but that did not make it right. In order to defend slavery they wanted to believe that the doctrine of State's Rights was true, and they did, but that did not

make it true, and their attempt to put it in practice resulted in one of the most fearful civil wars of which history gives us any account. But all that can be done it seems to me, in the way of diminishing the influence of personal considerations in determining premises, is, in the first place, to point out the great danger of such influences. I have given you examples of such influences from history; you need not go to history to find them in abundance. Incidents at school, if you are on the lookout for them, will give you ample opportunity to bring home to your pupils the fact that there is great danger that they will be led to believe this or that, not because a candid survey of all the facts shows that it is most probable, but because they wish to believe it. In the second place, you can set them a good example. I do not know how United States History can be taught profitably except by constant reference to current events. Mr. Freeman well says that "History is past Politics and Politics present History;" and the teacher of United States History should constantly try to illustrate "past Politics" by "present Politics," and show how "present Politics" are the necessary results of the Politics of the past. But to

do this profitably, to do it without exciting the prejudices of his pupils, he must make it very evident that in all the questions he discusses his supreme desire is to get at the truth. And he must really *have* that desire. In these and all other questions he should not only allow but encourage the utmost freedom of discussion. And when his pupils have pointed out an error in his reasonings—which they are sure to do sometimes—he should acknowledge it instantly, and thus show his supreme deference to truth.

I defined reasoning as that act of the mind by which we go from the known to the unknown, and I said that it consisted in a comparison of judgments and a concluding that something is true in consequence. Inasmuch as we compare different kinds of judgments in our processes of reasoning, logicians are in the habit of saying that there are three kinds of reasoning: deductive, inductive, and reasoning by analogy.

Deductive reasoning is that kind of reasoning in which we reason from general propositions to particular propositions, or to those that are less general than the major premise.

In the following syllogism, All men are mortal;

some animals are men; therefore, some animals are mortal, the conclusion, some animals are mortal, is a particular proposition, because the subject is a part of the class animals. But in this syllogism, All men are mortals, Americans are men, therefore, Americans are mortal, the conclusion, Americans are mortal, is a general proposition although it is less general than the major premise because the class men is much wider than the class Americans since a great many individuals are men besides Americans.

In order to point out some very common errors in deductive reasoning, it is necessary to define the various parts of which a syllogism is composed. I have said that a syllogism consists of the three propositions which give complete expression to an act of reasoning, and that the three propositions which constitute it are called major premise, minor premise and conclusion. You can always determine which is the conclusion because it expresses that which is believed in consequence of something else which is assumed to be true, but how can you determine which of the two premises is major and which minor? Not by the order in which they are stated, because that makes

no difference. I may say, All men are mortal; Americans are men, etc., or, Americans are men, All men are mortal and in either case the conclusion will be that all Americans are mortal.

If you examine this syllogism you will see that although there are in all three subjects and three predicates, six of both—there are but three different ones in the three propositions because each of them occurs twice. The subject, men, in the proposition, All men are mortal, is the predicate in the other proposition, All Americans are men, and the subject of that proposition, Americans, is the subject of the conclusion, All Americans are mortal. Again, also the predicate of the proposition, All men are mortal, is the predicate of the conclusion, All Americans are mortal. All good syllogisms have three terms, and with some exceptions which I will not enter into, but three, and these are called major, minor and middle. The major term is the predicate of the conclusion, the minor the subject, and the middle that term which is not found in the conclusion at all. In the syllogism we have been considering for example, “mortal” is the major term, because it is the predicate of the conclusion, and “Americans” is the

minor term, because it is the subject of the conclusion. Men being the term which is not found in the conclusion at all, is the middle term. When we know the major and minor terms of a syllogism it is easy to determine which is the major and which the minor premise. Both of these premises contain the middle term and the one which contains the middle term and the major term is the major premise, and the one which contains the middle term and the minor term is the minor premise. Thus, in the above syllogism, since "mortal" is the major term, the proposition, "All men are mortal" is the major premise, since it contains the middle term, "men" and the major term; and the proposition, Americans are men is the minor premise, since it contains the minor term Americans, and the middle term.

Summing up, we may say that a syllogism has three propositions, and but three — the major premise, the minor premise, and the conclusion; and three terms, and but three — the major, minor, and middle; that the major term is the predicate, and the minor the subject of the conclusion, and the middle term is not contained in the conclusion at all; that the major premise is that premise which

contains the major and middle terms, and the minor that one which contains the minor and middle terms.

LIST OF QUESTIONS.

1. What are the two things to be done in the training of the reasoning powers?
2. Illustrate the importance of the second.
3. What can a teacher do in the way of giving his pupils the training they need in that particular?
4. State the three kinds of reasoning, and define and illustrate the first.
5. What is the conclusion of a syllogism?
6. Give examples.
7. How can you tell which are the major and the minor premises of a syllogism?
8. Give examples.

LESSON XXX.

REASONING CONTINUED.



ALTHOUGH propositions seem to make but one assertion, or rather to be the expression of but one assertion, they really express two; one about the subject and one about the predicate. When I say, for example, that all men are mortal, I make an assertion not only about men but about mortal beings. I assert that all men are mortal, and that some mortal beings are men. When I say that some boys are studious, I not only make an assertion about some boys but about some studious persons, for I say that some studious persons are boys as well as that some boys are studious persons.

It is necessary to understand this clearly in order to be able to apply some rules of great importance in deductive reasoning. No syllogism is valid whose middle term is not distributed at least once, and no term must be distributed in the conclusion which has not been distributed in the premises. A term has been distributed *when the asser-*

tion (or denial) is made of the entire class of which it is the name. In the proposition, all men are mortal, mortality is asserted of *all* men, consequently, "men" is distributed, but since it is only asserted that *some* mortal "beings are men the predicate" mortal is not distributed. Inasmuch as this proposition illustrates all universal affirmative propositions in this respect, we have this general result: universal affirmatives distribute the subject, but not the predicate.

If we examine a particular affirmative proposition as, some boys are studious, we see at once that the assertion is made of only a part of the class boys and a part of the class studious persons. As we assert that *some* boys are studious, and that *some* studious persons are boys, we reach this general result — for this proposition illustrates all particular propositions — particular propositions do not distribute either their subject or predicate.

Let us examine a universal negative, for example, No dogs can talk. It is evident that in this proposition we deny not only that *any* dogs can talk, but that any talking creatures or creatures capable of talking, are dogs. In other words, the denial is made of the *whole* of the subject and

of the *whole* of the predicate or rather of the class denoted by the subject and predicate. Hence we see that universal negatives distribute both their subject and their predicate.

The particular negative is a little more difficult to analyze. If we examine the proposition: Some boys are not studious, it may seem at first sight that what it expresses is that some boys are not studious and that no studious beings are boys, but it evidently does not assert the latter, for the proposition is true but this latter statement is not. If we state the proposition in the form of an equation: Some boys equal some persons who are not studious, we see at once that it is not asserted that *no* persons who are studious are boys, but merely that *some* of them are not. But in order to see exactly what are the two assertions expressed by that proposition, we can state the equation in this form: Some boys equal no studious persons; in other words, we state that some boys are not any studious persons, and that no studious persons are some boys. Hence, we have as a general result that the particular negative does not distribute its subject, but does distribute the predicate.

Summing up, the universal affirmative distrib-

utes its subject, but not its predicate; the particular affirmative distributes neither its subject nor its predicate; the universal negative distributes both its subject and its predicate; the particular negative distributes its predicate, but not its subject.

If this is clear, I think you can see the reason for the statement that no syllogism is valid which distributes any term in the conclusion which was not distributed in the premises. In deductive reasoning, the conclusion is based upon, or drawn from, the premises. In other words, our reason for believing any conclusion so far as we believe it through deductive reasoning, is that it must be true if certain premises which we believe are true. If, for example, all As are Bs, and all Bs are Cs, then it must be true that all As are Cs. The truth of this may be made evident by the following equations: All As equal some Bs; All Bs equal some Cs, and inasmuch as all Bs equal some Cs it follows that some Bs equal some Cs. We have then the two equations, All As equal some Bs, and some Bs equal some Cs, and since things which are equal to each other it follows that, All As equal some Cs. But the syllogism, all As are Cs; all Cs are Bs; therefore, all Bs are As, is not valid

because it distributes B in the conclusion while it is not distributed in the premises. The following equations will make that clear : All As equal some Cs. All Cs equal some Bs. If all Cs equal some Bs, it follows that some Cs equal some Bs, and as things which are equal to the same thing are equal to each other it follows that all As equal some Bs or some Bs equal all As. But it is plain that we only are warranted in saying that *some* Bs equal all As, while according to the conclusion of the syllogism *all* Bs equal some As. Hence the syllogism is incorrect.

In every good syllogism, also, the middle term must be distributed at least once. In the following syllogism, All students are human beings ; all Americans are human beings ; therefore, all Americans are students, the middle term, human beings, is not distributed, and hence, the conclusion is incorrect. We might, indeed, say with truth that some Americans are students, but we cannot infer it from the premises. Precisely as good reasoning may lead us to false conclusions because the premises are false, so poor reasoning may lead us to a true conclusion. And that this reasoning is poor, I think the following considerations will help

you to see: Suppose we represent human beings by a large circle, and Americans and students by two small circles inscribed within. Do these circles overlap, or are they entirely separate from each other? The premises do not permit us to say. All that they warrant us in saying is that the circle which represents Americans must be inscribed within the circle that represents human beings, and that the same is true of the circle which represents students.

We have seen already that a good syllogism can have but one middle term. When a middle term means one thing in one premise and another in the other it is called ambiguous, and that, evidently, amounts to the same thing as two middle terms. If any one argues that "all metals are elements; brass is metal; therefore, it is an element," he reasons incorrectly, because the middle term, metal, is used ambiguously. In the major premise it is used in the sense in which chemists use it; in the other to denote a mixture of metals, in the sense in which it is used in the arts.

No conclusion can be drawn from particular premises. If I say some men are good, some men

are bad, that does not, of course, give me a right to say that some good beings are bad.

Also, from two negative premises, nothing can be inferred. If I argue that some Americans are not Europeans, and Virginians are not Europeans, therefore Virginians are not Americans, I reason incorrectly. It is true that things which are equal to the same thing, are equal to each other; but it by no means follows that things which are unequal to the same thing are unequal to each other.

LIST OF QUESTIONS.

1. Show that every proposition really makes two assertions.
2. State and illustrate what is meant by the distribution of a term.
3. What terms does the universal affirmative distribute?
4. What the particular affirmative?
5. What the universal negative?
6. What the particular negative?
7. Give illustrations of each.
8. Show that any syllogism which distributes any term in the conclusion, which is not distributed in the premises, is invalid.

9. Show that the middle term must be distributed at least once.

10. What is meant by ambiguity of the middle term?

11. State the following arguments in the form of a syllogism; point out the major, minor, and middle terms, and state whether they are distributed or not.

Bacon was a great lawyer and statesman; and as he was also a philosopher, we may infer that any philosopher may be a great lawyer and statesman.

Mathematical study undoubtedly improves the reasoning powers; but, as the study of logic is not mathematical study, we may infer that it does not improve the reasoning powers.*

12. Are they valid; and if not, why not?

* These arguments are taken from Jevon's Logic.

LESSON XXXI.

REASONING CONTINUED.



WE have seen that all reasoning consists in a comparing of judgments and a concluding that something is true in consequence, that when one of the judgments—expressed in a proposition called the major premise—is general, and the conclusion is drawn because it is seen to be included in the general assertion, the reasoning is called deductive; but that when the judgments compared are assertions about individual or particular facts, and the conclusion is a judgment about an entire class of facts, the reasoning is inductive.

I have called your attention a number of times to the fact that there are probably general propositions, which the mind believes, which it does not derive from any process of reasoning. I do not believe, as I have already said, that we learn by reasoning that a straight line is the shortest distance between two points, or that if equals are added to equals their sums will be equal. I regard

these as truths which the mind comes to know independently of any process of reasoning, self-evident truths—things which it *sees* to be true. These and similar propositions, of course, form the basis of all mathematical reasoning; and in these subjects, consequently, deductive reasoning is not based upon general propositions which have been reached by previous inductions.

But outside of the various branches of mathematics, I believe that all deductive reasoning is based upon premises which have been reached by previous inductions. You believe that any unsupported body will tend to fall to the ground. Why? Because you believe that *all* unsupported bodies will, and you believe that because you have seen a great many bodies fall when they were unsupported; in other words, it is an induction. You believe, likewise, that any particular man you know will die sometime, because you believe that all men will die, and you believe that because of the individual men you have known to die.

Sully very properly calls attention to the fact that induction very closely resembles the process of generalization which I described a few lessons back. Generalization, you will remember, is the

last of the three processes involved in the formation of a concept. A child directs his attention to two or more objects at the same time — comparison — and after noting their like and unlike qualities fixes his attention upon the former exclusively — abstraction — and thinks of them as the characteristics of a class — generalization. But there is no going from the known to the unknown, and, consequently, no reasoning in the act of generalization. When a child, noting that two or more objects resembling each other in a number of particulars, and all used to sit in, thinks of the qualities in which they resemble each other as the characteristics of a class — thinks, in other words, of all objects possessing these qualities as members of the class, chairs, he does not make an inference about the objects he does not see. He does not say that since these chairs have this and that and the other quality, therefore all chairs have them — that would be an induction. But he says that since these objects are alike in certain respect I will make a class of them, and *if* there are any other objects which possess the same qualities I will put them in the same class.

Of course you will not suppose that I mean

that a child definitely thinks any such thoughts as I have explicitly stated. I have tried to make quite clear the great difference between what the mind really does and what it is definitely and distinctly conscious of doing. And when a child sees two objects and calls them dogs—thus putting them in the same class—and when seeing another dog, says, “dog”—putting it in the same class—it is plain that his mind has followed substantially the track which I have endeavored to describe above. This, I say, is generalization. But I think you see the wide difference between generalization—making a class of objects—and induction—concluding that since one or more members of a class have such and such characteristics, that therefore they all have it; or that since something is true of one or more members of a class, therefore it will be true of all—induction. In the one case, we are merely arranging objects into classes and not reasoning at all; in the other, we reason from one or more members of the class to the entire class.

If this is clear, I think it will be evident that induction presupposes generalization. If in induction I reason from one or more members of a class

to the whole class, I must have the idea of the class already formed in my mind.

But reasoning, in turn, makes all but the simplest generalizations possible. I will illustrate. A child sees a round, yellow object, takes hold of it, eats it, and in this way learns the kind of sensations it produces through his various senses. He hears his mother call it an orange. The next day he simply sees an orange — does not feel it or taste it — and says “orange.” What does he mean by that? He means, if he uses the word intelligently, that the object would feel thus and so, if he could get hold of it, and taste in such and such a way; in other words, he is reasoning. Inasmuch as the object which had such and such a color yesterday had such and such other qualities, therefore, this object, which has a similar color will have similar qualities. Hence, as I think you see, there is an element of reasoning in all cases of what we call perceiving. All perceiving is a process of projecting certain sensations actually experienced, and certain others which are merely imagined, into the external world, and regarding them as qualities of the external world, and the imagined sensations are grouped with those actually experienced, because of processes of reasoning.

And this enables us to see from another point of view not only how important is the part which reasoning plays in our mental life but at how early an age children begin to reason. When a child begins its life in the world its mental existence is simple sentiency — as I think — in other words, it merely has feelings. In the course of a short time, it begins to form judgments about its sensations; it begins to think. When thought begins, knowledge begins. Little by little, he begins to group his way out from the darkness of absolute ignorance and learns to know a few of the objects and persons which surround him. He learns to know his mother and nurse and a few of the objects which have an intimate relation to his pleasures and pains. But this advance in knowledge, every step of it, is gained through reasoning. And I will digress here, to remark that if you will notice the kind of things which the child first learns and how he comes to learn them, you will get another illustration of the interdependence of knowing, feeling and willing. It is the character of his interests that determines the character of his knowledge. He knows one thing and is ignorant of another, because one of them has appealed to the emotional


side of his nature — has aroused his interest — and the other has not. Here, as everywhere, the law is illustrated, no knowledge without attention, and no prolonged attention, in the case of children none at all, without interest.

LIST OF QUESTIONS.

1. Define intuition and give examples.
2. Define and illustrate induction.
3. State and illustrate the difference between induction and generalization.
4. Show that induction presupposes generalization and induction generalization.
5. What is perception?
6. What kind of facts does the child first learn and why?

LESSON XXXII.

REASONING CONCLUDED.

F you carefully compare inductive and deductive reasoning, you will see that they differ in a matter of fundamental importance. In deductive reasoning, if the premises are true and the reasoning is correct, we may be absolutely certain of the conclusion. But this is not true of inductive reasoning. In inductive reasoning we may reason from true premises to a false conclusion by a method which it would be difficult to show to be incorrect. The reason of this is that there are two assumptions, one or the other of which underlies nearly or quite all of our inductions, which are both of them incapable of absolute proof. When, because I have seen a great variety of unsupported bodies fall to the ground, I reason that all unsupported bodies will, it is because I assume *that these unsupported bodies are a type of all unsupported bodies.*

When I reason that all crows are black because all the crows I have seen were black, I

make the same assumption—that the crows I have seen are types or examples of the entire class. This assumption clearly underlies a large part of our inductions, and we never can be quite sure in any case that we have a right to make it. Of course it is more likely to be true when the instances which we assume to represent the entire class are very numerous. But no matter how many cases we have examined, it will always be true that some member of the class which we have not seen may be unlike those we have seen.

An hypothesis is an assumption which we make to account for facts. Our minds are of such a nature that we feel a certain uneasiness when we know a fact which we cannot explain, and therefore it is natural for us to try to make some hypothesis or supposition to account for any fact we know. And since, of course, we do not make improbable suppositions to account for facts, or rather since we do not make suppositions which seem to us improbable, we are inclined to regard them as true so long as they explain the facts. And this is the other assumption upon which, as I have said, the greater part, if not all, of our inductions are based.

This assumption cannot be so definitely stated as the preceding one. It would not be correct to state it in this form: An hypothesis which explains facts is true. For one great reason why people differ from each other so widely in their opinions is that of two hypotheses which equally well explain the facts, one seems true to one, and the other to another. A dozen men on a jury listen to the same evidence and part of them base one conclusion upon it and the rest of them another. This is only another way of saying that one hypothesis which explains the facts seems probable to a part of them, and another to the rest of them. I do not believe that a more definite account of this assumption can be given than the following: We are naturally disposed to believe any hypothesis which does not seem improbable in itself, and which explains facts for which we have, apart from it, no explanation.

The question as to why different suppositions seem probable to different minds, is a very difficult one, too difficult to make it proper to discuss it in these lessons. I will only remark that it is one of the chief causes of the differences of opinion among men. I called your attention some time

ago to the fact that one great reason for the differences of opinion among men is that they base their reasonings on different major premises. We see now, I hope, that these different major premises are different hypotheses, all of which seem to explain the facts which they are invented to explain, but one set of which seem to one party probable and another to another.

Since we cannot rid our inductions of an element of uncertainty no matter how cautiously and carefully we frame them, I think it is evident that unless we make them as cautiously and as carefully as we can they are likely to have very little value. "I do not like Jews" says one. Get him to tell you why and you will find that the reason is that he has known two or three Jews who were not pleasant persons. "It does not do boys any good to go to college. John Jones went to college and he does not know any more than Will Smith does"—as though an examination of the case of John Jones entitled one to an opinion of the whole class of students that attend college. These are the kind of inductions you see people making every day of their lives, and I hope I need not say that they are inductions which they have no right

whatever to make. The best thing you can do to guard your pupils against that sort of thing is so constantly to call their attention to the necessity of founding their inductions upon a wide basis of facts, that they may get a realization of the danger of doing anything else.

Of course the first condition of doing this successfully is that you have a vivid appreciation of the dangers of such inductions yourself. And if you have such an appreciation, by encouraging them to express their opinions upon the various matters that come up, you can do something to develop such an appreciation in them. And when you are trying to develop such an appreciation, first of all in your own mind and then in the minds of your pupils, remember that the greatest foe of progress is Ignorance, and that the strongest friends of Ignorance are the Dogmatism and Prejudice to which careless and slovenly reasoning naturally give birth.

I have said that reasoning is a comparison of judgments and a concluding that something is true in consequence; that in deductive reasoning one of the judgments compared is expressed in a general proposition called the major premise, and in

inductive reasoning, the judgments compared are particulars, each of which asserts or denies the same fact of members of the same class. Besides these two, we have seen that there is a third kind of reasoning — by analogy; and it only remains to see what that is, to bring this discussion of reasoning to a conclusion.

Argument from analogy is defined by Jevons as “direct inductive inference from one fact to any similar fact.” The same author gives the following example: “Thus the planet Mars possesses an atmosphere, with clouds and mist closely resembling our own; it has seas, distinguished from the land by a greenish color, and polar regions covered with snow. The red color of the planet seems to be due to the atmosphere, like the red color of our sunrises and sunsets. So much is similar in the surface of Mars and the surface of the earth, that we readily argue there must be inhabitants there as here. All that we can certainly say, however, is that *if the circumstances be really similar, and similar germs of life have been created there as here,** there must be inhabitants. The fact that many circumstances are similar, increases

* Italics are mine.

the probability. But between the earth and the sun, the analogy is of a much fainter character. We speak, indeed, of the sun's atmosphere being subject to storms and filled with clouds, but these clouds are heated probably beyond the temperature of our hottest furnaces; if they produce rain, it must resemble melted iron; and the sun-spots are perturbations of so tremendous a size and character, that the earth, together with half a dozen of the other planets, could readily be swallowed up in one of them. It is plain, then, that there is little or no analogy between the sun and the earth, and we can therefore with difficulty form a conception of anything going on in a sun or a star."

This kind of reasoning seems to me much more uncertain even than inductive reasoning. Jevons speaks of the similarity between so many circumstances in the case of Mars and the earth as *increasing* the probability that the former is inhabited because the latter is, and at the same time says that "all we can certainly say is, that if the circumstances be really similar, and similar germs of life have been created there as here, there must be inhabitants." Need I say that in the very nature


of the case we neither know nor can know anything about the latter point, and that our knowledge of the former is so limited that any talk of probability is absolutely without foundation? All that the facts warrant us in saying is that for aught we know Mars *may* be inhabited, but he who claims to be able to say that it probably is, lays claim to a larger amount of knowledge than, in my opinion, falls to the lot of mortals.

LIST OF QUESTIONS.

1. State and illustrate a fundamental difference between deductive and inductive reasoning.
2. State and illustrate the two assumptions upon which inductive reasoning is based.
3. What can we do in the way of training our pupils to form habits of careful and cautious reasoning?
4. What is reasoning by analogy?
5. Illustrate it.
6. Show that it is even more uncertain than inductive reasoning.

LESSON XXXIII.

THE PRIMARY INTELLECTUAL FUNCTIONS.



IN one of the earlier lessons we saw that there are three classes of mental facts, knowing, feeling and willing, and that the mind as possessing and exercising the power to know is called intellect. Since then, we have been occupied for the most part with this side of mental activity, having studied sensation, perception, memory, imagination, conception, judgment and reasoning.

I wish in this lesson to state and illustrate the fact that in all these various modes of intellectual activity the mind is really doing but two things; discriminating or noting differences, and assimilating or noting resemblances.

What is it to know a sensation? It is to discriminate, or mentally separate it from all other sensations. A child has many sensations which it does not know; many sensations, in other words, which it confuses with other sensations. But a sensation confused with other sensations is a

sensation put in the wrong class, precisely as if one were picking out a lot of ribbons of different colors, the confusing of purple with blue would lead to the mixing of these two kinds of ribbons.

So likewise in perception. The first act of the mind in perceiving is to separate mentally the thing perceived from everything else. You will remember that in the lessons on Attention, I pointed out the fact that what we perceive depends upon what we attend to. The mind in attention simply singles out the thing attended to from everything else, and that is discrimination. A dog may stand before you, but if through pre-occupation or from any other cause you do not discriminate it from the objects about it, you do not know it. But discrimination is not all that is essential to knowledge. As a matter of fact, when we discriminate we usually know because assimilation or the act of putting a thing discriminated into a class usually follows so closely upon the act of discrimination that the two may seem to you to be identical. But they are not. To pick a piece of blue ribbon out of a scrap bag is one thing; to put it in a box with other blue ribbons is an entirely different thing. A child seeing a

dog, may discriminate it from all other objects, but until he perceives its resemblance to something else, until he assimilates it, he does not know it.

So likewise with memory. What is it to have a perfect recollection of any event? It is to have an entirely definite knowledge both of the event and of the time when it happened. If the event is indistinct, it is not perfectly remembered, and its indistinctness is due to imperfect discrimination and assimilation. If we are in any doubt as to the time it is because we do not perfectly discriminate it from other times, and do not perfectly assimilate it to other times. The event happened, say, at eleven o'clock yesterday, but I am uncertain whether it was eleven or twelve, or whether it happened yesterday or the day before; that is, I do not discriminate the hour and the day when it happened from all others.

Possibly you think that in this latter case there is no assimilation. Inasmuch as in any one place there is but one point of time known as eleven o'clock April 26, 1890, the question may be asked as to how it is possible for assimilation of such a fact to take place? The question can be

readily answered if we bear in mind that what we mean by "eleven o'clock yesterday" is a complex idea. Before a child can understand it, he must know the meaning of "yesterday" and "eleven o'clock"—and this is possible only by discrimination and assimilation. But with these two ideas as elements, all that is necessary to the formation of the complex notion, expressed by the phrase, eleven o'clock yesterday, is a synthesis of the two through the exercises of the constructive imagination. To say, therefore, that discrimination and assimilation, *constitute* knowing is incorrect. To know such a fact as the one we have been considering and indeed all facts which require the activity of the constructive imagination is to discriminate, and assimilate, and perform an act of synthesis.

We have seen that the three processes involved in conception are comparison—putting the attention on two or more objects at the same time; in other words, discriminating them from all other objects; abstraction—withdrawing the attention from their unlike qualities and fixing it upon their resemblances; in other words, assimilating them; and, generalization—thinking of

their like qualities as the basis of a class, which is a further act of assimilation.

In order to judge, we must know the subject and predicate; and to do this, we must discriminate and assimilate them. I can not judge that oak trees lose their leaves in autumn unless I know what oak trees are and what is meant by losing their leaves; and when I know the subject and predicate of a judgment and judge affirmatively, I assimilate them; and when I judge negatively, I discriminate them.

The same is true of reasoning. When I say that John is mortal, since he is a man and all men are mortal, my conclusion is the result of two acts of assimilation; the assimilation of John to the class men, and of these to the class mortals.

When I say that since this and that and the other unsupported body have fallen, therefore all unsupported bodies will, I have perceived, in the first place, the resemblance between the unsupported bodies I have seen—I have assimilated them, in a word; and, in the second place, I have assimilated them to all other unsupported bodies.

Since all knowing consists to so great an extent of discrimination and assimilation, it may

seem strange at first sight that there are so many different kinds of knowing. The explanation is found, in part, in the fact that the knowing powers of the mind are exercised on very different materials. The discrimination and assimilation of *single sensations* leads to the knowledge of sensations; of *groups of sensations* to the perception of objects which result in percepts; of *percepts*, to concepts; of *concepts*, to judgments; of *judgments*, to conclusions.

But if all knowing consists in discrimination and assimilation, if nothing is known until it is discriminated and assimilated, how can there be a first act of knowledge? In other words, how is it possible for a child to perform the acts of discrimination and assimilation for the first time, since because it is the first time, he can have known nothing from which to discriminate the thing he is in the act of knowing, and to which to assimilate it? A careful study of children will put us on the track of the right answer. If we observe children, we shall be able to understand the paradox, "Knowledge begins in ignorance." We shall realize the truth to which I have so often called your attention — that it is one thing to have

a sensation and another to know that we have it. We may conceive, I think, a first knowledge as gradually arising out of ignorance, so gradually that it would be impossible for us to say, even if we had the most accurate knowledge of a child's mind just when the first act of knowledge was performed. Probably discrimination first takes place. A child has a sensation and knows that it is different from other sensations which he is experiencing at the same time, and perhaps also from those which he has just experienced. Upon a recurrence of the sensation, he may recall the preceding case; if so, there is not only discrimination but assimilation, in other words, knowledge; if not, again there is only discrimination, and knowledge waits until the process of assimilation takes place.

LIST OF QUESTIONS.

1. What is the intellect?
2. What are the primary intellectual functions?
3. Show that in perceiving, remembering, imagining, conceiving, judging and reasoning, we are only discriminating and assimilating.

4. Explain how it is that there are so many different kinds of knowing.
5. How does knowledge begin?

LESSON XXXIV.

THE PRIMARY INTELLECTUAL FUNCTIONS CONTINUED.



IN the last lesson we saw that perception, memory, imagination, conception, judging, and reasoning are only processes of discrimination and assimilation exercised on different materials.

This being so, the question, How can I impart knowledge most clearly, can be put more definitely. From the point of view we have now reached, we are able to see that the question is, How can I enable my pupils to discriminate and assimilate most perfectly?

If you wish to find for yourself a clear answer to this question, you will do well to ponder upon the following principle: *Objects and wholes of any kind are more easily discriminated and assimilated than qualities and parts.* The ground of this principle is evident. Objects and wholes of any kind differ from each other in more marked and striking ways than qualities and parts, and consequently

can be more easily discriminated. Since they also resemble each other in a greater number of particulars they can be more easily discriminated.

But you may easily settle its truth by appealing to your own experience. Which do you recognize more easily and certainly, your friends as wholes or their individual features? Try to describe the features of your most intimate friends in their absence and you will see. You will often find yourself ludicrously uncertain as to the shape of the nose, the color of the eyes and hair, to say nothing of less prominent features. All of us likewise recognize a rose when we see it, but it requires the training of the botanist to point out the qualities which distinguish it from all other flowers.

In the lessons on Conception, you will remember that I called your attention to the fact that the greater part of our concepts are implicit; in other words, that we can often recognize objects when we cannot tell how or why we recognize them. I hope it is clear to you that the reason for this is that we have discriminated and assimilated the whole object but not its parts and qualities.

This distinction between implicit and explicit

concepts coincides with the distinction between clear and distinct knowledge. In other words, when we have an implicit concept of a thing we are said to know it clearly; when we have an explicit concept of it, we are said to know it distinctly. When I can simply recognize a rose without being able to tell how or why I recognize it, I have a clear knowledge of it, and likewise an implicit concept of it; when I can tell why I recognize it, I know it distinctly and have an explicit concept of it.

It is evident that before we can know a thing distinctly we must know it clearly, or before we can have an explicit concept of a thing we must have an implicit concept of it. In other words, *before we can discriminate and assimilate the parts or qualities of wholes or objects, we must discriminate and assimilate the wholes or objects.*

And here we get an illustration of the importance of the principle upon which, as I have said, the art of communicating knowledge chiefly depends. What is it to define a word? It is to state those qualities or characteristics of the class of things of which the word is the name which are usually associated with it. To define "man,"

for example, is to state those qualities or characteristics of man which are usually associated with the name. But it is evident that I cannot do this until I can discriminate and assimilate the qualities that distinguish man from all other animals, and to do this, I must have a distinct knowledge, or explicit concept of him.

Since the definition of a word is a statement of the parts or qualities of a thing of which we have an explicit concept, we have a good general rule to go by, especially in all our elementary teaching: Develop implicit concepts before seeking to develop explicit concepts; or, seek to give your pupils clear knowledge before trying to give them distinct knowledge; or, try to enable your pupils to recognize objects before teaching them the definition of their names. Unless you observe this rule, your teaching of definitions will often be nothing but a process of fixing unmeaning words in the minds of your pupils. If you wish to give your pupils the power to define a noun, do not imagine you have done so, to any educational purpose, when you have succeeded in making them commit the words of a definition to memory. Definitions are valuable simply as means of developing

in the mind explicit concepts. If they accomplish this purpose, they are valuable ; if they fail in this, they are of no more use than would be the knowledge of a sentence in Sanscrit without a knowledge of its meaning. But if in defining words you take pains first to give your pupils an explicit concept, you pave the way for a thorough comprehension of your definition ; in other words, you supply the conditions for the development of an explicit concept. In defining " noun," for instance, you should *naturally* proceed somewhat as follows: Hold a book before them and ask them what it is. When they have told you, write the word " book " on the board and ask them what it is. Then ask them to give you the names of some of the objects in the school-room — along the road that leads to the school, and some of the people they know. Write them down, and then say that all those names are nouns. At that stage you may imagine that you have given them a clear knowledge or an implicit concept of a noun, but you cannot be sure of that. We are very likely to under-rate children's difficulties, and so, in order to be sure that the child has an implicit concept of a noun, you ask him to give you more examples. If he cannot do this,

you must continue in the same way—get him to give you more names, each time telling him that the name is a noun, until when you ask him to give you further examples of nouns he can do so. *Then* he has an implicit concept, a clear knowledge of a noun, and then he is ready for the definition. Indeed, the chances are that some member of the class will be able to define the word for you. For as naturally as a flower develops from a bud, so naturally, to use an illustration given by one of my pupils, does distinct knowledge develop from clear knowledge.

I said above, that the rule of which I have been speaking is a good *general* rule. The very case we have been considering will enable us to see that there are exceptions. Instead of teaching a child the definition of a noun in the way I have described, we might have made short work of it by requiring him to commit the definition to memory. Why is the former method preferable? (1.) Because it occasions more mental activity. That method leads the pupil to make the definition for himself. (2.) Because it is more interesting. Any method which occasions the mind's activity is interesting. (3.) Because you can be

sure in this way that you are not teaching words simply.

A pupil with a good mind and some considerable degree of maturity, might not get enough mental exercise out of that mode of learning the definition of a noun to make it preferable to the shorter method. What method should be used in any particular case is a question for your own tact to determine. The more elementary the teaching, the greater the need of observing the rule above laid down. And at any stage, if you are in doubt as to whether to follow the rule or not, I think you will be likely to be on the safe side by giving the rule the benefit of the doubt.

That we must proceed from the simple to the complex, from the indefinite to the definite, from the unqualified to the qualified, is another well-established pedagogical rule. What is its psychological basis? Plainly that a simple, indefinite, or unqualified fact or statement is more easily discriminated and assimilated than a complex, definite, or qualified fact or statement. If you are teaching a child the form of the outlines of South America, you will succeed best by ignoring its irregularities in the beginning. With the map

before him, make him conscious of its general resemblance to a triangle or a ham of meat, or other familiar object, before you try to teach him how it differs in shape from them. If in such ways you fix the general outline in his mind before advancing to the details, you will impart clear ideas. And why? Because you are working in harmony with the laws of his mind.

There is a stronger resemblance between the outline of South America and a triangle than there is between it and any other simple figure, and if the child has a familiar knowledge of a triangle, he assimilates the general shape of South America as soon as his attention is called to it. Indeed, so far as *thought* is concerned, this ease comes under the general principle spoken of in the first part of this lesson—wholes and objects are more easily discriminated and assimilated than parts and qualities. To *thought*, South America has the shape of a triangle—a whole—qualified by certain irregularities. In other words, just as the mind grasps a whole before it does the parts, so it grasps the triangle in South America before it does the deviations from a triangle. So likewise of the unqualified or indefinite in relation to the

qualified or definite. In relation to thought, the unqualified and indefinite are wholes first known as such before they are qualified and made definite, and the qualities are parts.

LIST OF QUESTIONS.

1. State another form in which the question, How can I impart knowledge most clearly? may be put and show that it means the same.

2. State and illustrate an important principle to be observed in imparting knowledge.

3. What is the difference between clear and distinct knowledge?

4. Show the bearing of the distinction on teaching definitions.


5. Illustrate.

6. Show that the rule for teaching definitions is only a general rule.

7. Why should we proceed from the simple to the complex?

LESSON XXXV.

THE PRIMARY INTELLECTUAL FUNCTIONS.

N the last lesson, I called your attention to an important pedagogical principle, namely: Objects and wholes of any kind are more easily discriminated and assimilated than parts and qualities. I wish to emphasize the *range* of this principle, to call your attention to the fact that you must not limit its application to *material* objects, and *material* wholes. It applies to *thought* wholes as well. Indeed strictly speaking all wholes are *thought* wholes, wholes made by thought, wholes because the mind chooses to think of them as such. There is absolutely nothing in existence except the universe which we may not think of as a part if we choose. The universe, including everything, cannot be thought of as a part of any thing else. A part from that, it is *thinking* and thinking only which makes a thing a part or a whole.

If I may digress for a moment here, I will say that a great deal of poor teaching of fractions

grows out of a failure to keep this fact in mind. A fraction is defined as one or more of the equal parts of a unit, as though units were things of fixed and unchangeable values. I divide an apple into four equal parts, and you ask me if one of these equal parts is a fourth. I do not know how to answer the question, or rather the question does not admit of an answer until it is made more definite. If you ask me what I call one of the parts in relation to the other three, I answer, a unit. It is *one* in relation to the other three, *two* in relation to eighths, *four* in relation to sixteenths, and *one-fourth* in relation to the apple. The apple itself is one-fourth when considered in relation to a group of four apples, one-eighth in relation to a group of eight apples and so on. As the mind decides in what relations it will consider things, it is clear that all wholes as such are products of the mind. The reason why certain wholes as apples, oranges, horses, dogs, etc., are thought of as wholes in a special sense is that the purposes of life and their relation to each other make it natural for the mind to consider them as such. If this is clear, we may say that a whole is anything, mental or material, which the mind chooses to regard as a

whole. Thus we may think of the life and public services of Alexander Hamilton as wholes. And in accordance with the principle I have been discussing, the student will be best assisted in getting clear ideas of the life of that great man by having his attention called, to its broad general characteristics first, before these are modified and qualified. If the student learns that Hamilton was first a Tory, then a Democrat, and finally a believer in a strongly centralized aristocratic Republic, the broad outlines of Hamilton's political creed lie before him — they are the triangle in the outlines of South America. The qualifications and specific description of these characterizations, will put the changes in and final character of Hamilton's political creed with the utmost definiteness before him. So if your object is to give your class a clear idea of Hamilton's public services, first give them a clear idea of the great work of his life — the strengthening and centralizing of the general government ; then they are ready for the details, the measures and influences by which these were reached.

You should carefully note that the principle we have been considering relates *to the communica-*

non of knowledge. I think I have called your attention to the fact that there are two methods, called by Jevons the method of *instruction* and the method of *discovery*. If you are using the method of discovery, if you are trying to take the minds of your pupils along the course taken by the mind of the discoverer, trying to make him find out for himself the truths you wish him to learn, you will of course follow a different plan. You will make him acquainted with the details first, in the hope that he may see the underlying principle—as I exp'ained at length in discussing the Objective Method of teaching. *When* you should use the method of instruction and *when* the method of discovery is a question, which, as I said in the last lesson, must be left to your own tact to answer.

That we must proceed from the known to the unknown is another well established rule in Pedagogy. It is hardly necessary to say that it is based on the fact that all knowing consists to so great an extent in discriminating and assimilating. When I learn a new fact—till then, of course, unknown—I put it in a class of already known facts.

How easy it is to violate the rule, simple as it is, no one but the very observant teacher duly appreciates. Nothing but the closest observation, based on long experience, will enable a teacher to realize how likely he is in his explanations to assume that his pupils know what they do not know. We are very apt to project ourselves, so to speak, into the minds of others, and think that what is familiar to us is familiar to them. The teacher, indeed, who talks for the sake of teaching, who explains in order to make things clear, and who realizes the immense difficulty of his work will never neglect to use measures to determine whether or not he has succeeded. He will, in the first place, encourage his pupils to ask questions. In an entirely practical and unpedantic way, he will make them understand that his business as a teacher is primarily to remove the obstacles to, and supply the conditions of, growth. If he does his work so thoroughly as to make that impression upon his pupils, and if he arouses a genuine interest in the subject, they will do much to make him aware of his error when he assumes in his explanations that they know what they do not know—the error of going from the unknown to the unknown. But he cannot depend upon this.

There are pupils in every class who are enough interested in a subject to exert themselves sufficiently to comprehend an explanation adapted to their knowledge and development, but who do not care enough about it to ask questions. Such pupils will often indeed say that they understand an explanation when they do not, because, as they will say to each other, they are tired of hearing the teacher talk about it. To meet such cases, the teacher must employ another resource; he must require his pupils to reproduce his explanation. If the pupil understands it, his reproduction of it tends to fix it in his mind and the minds of his classmates; if he does not, the teacher learns just where the difficulty is and what he must do to remedy it. And instead of giving the remedy himself, it will often be useful to call on some member of the class to come to the assistance of his classmate. The freshest and most open-minded teacher will often catch himself thinking in grooves and ruts and using stereotyped phrases, and will sometimes be delighted to see his own idea reproduced by one of his pupils more clearly and forcibly than he himself had given it. Further, the teacher who is resolved to

proceed from the known to the unknown dare not suppose that, having imparted a piece of knowledge, he can assume it as known thereafter, and start from that as a basis. In the first place, pupils often forget; and in the second, even when they remember, they often have such an imperfect grasp of what they know as to be unable to use it in thinking. A man who has just learned the value of English coins would not be ready to take a position as a bank clerk in England. He would either make multitudes of mistakes, or do his work so slowly as to be of little use for the first few days. So a student who has acquired new ideas must become familiar with them, he must look at them from this point of view and that, consider them in a variety of relations, before he can use them as tools in thinking.

Perhaps I shall have no more convenient place than this to speak of the function of reviews. It is, for the most part, to give precisely that familiarity to ideas which makes it possible for the student to work with them. The student who can repeat a declamation slowly only after prolonged thinking, is not prepared to declaim it. And in like manner, the student who can only

with great effort recall the meaning of certain terms, is not prepared to use them in thinking. It is unfortunate that the term "review" is usually limited to going over a subject a second time, immediately after it has been gone over on the advance, and just before examination. That conception tends to promulgate the idea that reviews are useful only to fix things in the mind of the student in order that he can tell them. If they are only good for that, they are hardly good for anything. There are three stages of knowing. In the first, knowledge is merely implicit; the student can not express what he knows. Such knowledge is useful as a foundation for something better; but if it never leaves that stage, it is almost worthless. In the second, it has become explicit; the student can tell what he knows, but he does not know it fluently enough, so to speak, to use it in thinking. In the third, the student not only knows, but knows so well that he can use his knowledge in thinking. His knowledge has become thoroughly assimilated; it has become a part, as it were, of the warp and woof, the flesh, and bone, and blood of his mind. To develop knowledge into that shape, is, I repeat, the great function of reviews.

LIST OF QUESTIONS.

1. What is a thought whole?
2. Illustrate.
3. Explain the methods of instruction and discovery.
4. How can you avoid assuming that your pupils know what they do not?
5. What is the use of reviews?
6. What are the three stages of knowing?
7. Illustrate.

LESSON XXXVI.

DEVELOPMENT.



WE saw in our first lessons that the primary end of education is development. After having made a survey, superficial though it has been, of the intellectual faculties, we may profitably consider a little more closely what it means and what its conditions are.

Aristotle said: "It is a shame not to have been educated; for he who has received an education differs from him who has not, as the living does from the dead." I know not where to go to find a more forcible statement of the nature of education. And yet it is misleading. The difference between the educated and the uneducated man is not so much akin to that between the living and the dead, as to that between the fully developed tree and the seed from which it sprang. The two contrasted ideas are not life and death, but completeness, fullness of life, and incompleteness, defectiveness of life.

In order to get our pupils to obtain that abun-

dance of life and power which it is the object of education to give, we must of course induce them to exercise their powers. If their powers of observation, memory, imagination, reasoning, etc., are to be developed, we must get them to observe, remember, imagine, reason,—there is no other way. This is the reason for that oft-quoted maxim that it is not what we do for our pupils but what we induce them to do for themselves that educates them. You can no more observe or remember or think for your pupils than you can eat or drink for them. But as an intelligent mother can tempt the appetite of her ailing child with food adapted to its digestive powers, so you can induce your pupils to exercise their powers by presenting material adapted to their minds, and the result of a systematic exercise of the powers of the mind is education.

It is putting the same fact in another light to say that all education is the formation of certain habits. Dr. Reed said: "As without instinct, the infant could not live to become a man, so without habit man would remain an infant through life, and would be as helpless, as unhandy, as speechless, and as much a child in understanding at three

score as at three." This doubtless seems to you a strong statement, and yet a literal acceptance of it would lead you to under-estimate, rather than over-estimate, the work of habit. If a child's sensations become more definite, if his perceptions become clearer, if his memory becomes more accurate, if his imaginations come to correspond more and more with facts, if he reasons more and more correctly and logically, it is because of habit. Habit is the architect that builds the feeble, rudimentary powers of the child into the strong, developed powers of the full grown man. What is the Law of Habit? It is that every time we perform any action, mental or physical, we have more proneness to, and a greater facility for, the performance of that action under similar circumstances than we had before. All the curious gestures, ways of holding the hands, attitudes, modes of speech, and the like that characterize the various people we know are due to the Law of Habit.

Sully says that the "formation of a disposition to think, feel, etc., in the same way as before, underlies what we call habit," and that "in its most comprehensive sense" it means "a fixed tendency to think, feel, or act in a particular way

under special circumstances." He thinks that "habit refers to the fixing of mental operations in particular directions," and hence, that it does not constitute the sole ingredient of intellectual development. He thinks that it is "the element of persistence, of custom, the *conservative tendency*," and that since "growth implies flexibility, modifiability, susceptibility to new impressions, the *progressive tendency*," "habit is in a manner opposed to growth."

Is he right? Is it true that habit is in a manner opposed to growth? If so, education means more than the formation of certain habits, and I have over-stated the importance of the Law of Habit.

If I mistake not, his opinion grows out of a failure to distinguish between *habits* and *Habit*. Many particular habits undoubtedly are bad. A man may form the habit of reasoning on insufficient data, or of observing carelessly, he may form the habit of forgetting that he is finite and so liable to mistakes — that all that he has thought on any subject may be wrong because he may have overlooked some fact already known, or because some unknown fact may make all his conclusions wrong.

He may form the habit of laying great emphasis on consistency, that "hobgoblin of little minds," and so go through the world with his head turned over his shoulder determining what he will believe to-day by what he believed yesterday. He may form the habit of deciding what he will believe by some other principle than reason. As the Chinese go to Confucius, and Catholics to the Pope, to tell them what to believe, so he may go to his father, or some politician, or the convention of his party, or his newspaper to tell him what to believe. These habits are unfavorable to growth and are therefore bad habits, but is there anything in the nature of Habit to make it necessary for us to form bad habits? Are there not some open-minded, cautious, independent reasoners? And what is an open-minded reasoner? He is one who has formed the habit of being constantly on the alert to find new evidence, one who knows and feels that when men have done their utmost to avoid error, they cannot be so sure they are right as to shut their minds to all further considerations—one who has so habituated himself to considering the supreme difficulty of arriving at the truth in any matter of complexity that he is rather inclined to

wonder that men are ever right, than to assume that they can consider themselves as undoubtedly right whenever they reach a conclusion. What is a cautious reasoner? He is one who has so accustomed himself to the thought of the infiniteness of the universe, that *what is known* in comparison with *what is*, seems to him like a drop of water in comparison with the Pacific Ocean, and hence he habitually realizes the supreme necessity of collecting as many facts as possible bearing on any matter under consideration before he reaches a conclusion. What is an independent reasoner? He is one who has no Confucius, one who does not go to his father, or to any influential politician, or to his party convention, or his newspaper to find out what to believe — one who does not use his reason merely to find arguments to defend conclusions furnished him from some external source, but to learn what is true.

Is there any antagonism between such habits and growth? Can we say that such habits represent the *conservative* tendency? I can not think so. When teachers come to realize that this characteristic of open-mindedness, and caution, and independence is not only one of the rarest among

educated men, but one of the most important; when they realize that no matter how able and brilliant a man may seem, he is a fossil, a thing of arrested development, precisely to the extent to which he is lacking in this characteristic; when they have become profoundly convinced of the fact that the supreme difference between the most progressive civilizations in the world and such nations as the Chinese, is that the people of the former have formed the habit, to some extent, of going to reason to tell them what to believe, and the people of the latter have formed the habit of accepting their beliefs on authority, they will not only be sure that there is no antagonism between growth and habit, but that an important part of their work consists in rooting up the habits which would confine the thoughts of their pupils within the thoughts of the past, by helping them to form habits of open-minded, cautious, independent reasoning.

I hope you will pardon me for repeating here that you can not help your pupils to form that habit until you have formed it for yourself. It is the *example* of open-minded, cautious, independent reasoning; it is the fervid appeal to students

not to imitate a flock of sheep, who jump when their leader has jumped, and do not jump when he has not jumped, without regard to the considerations that influenced him — a fervor which can emanate only from one who so believes in, as to practice that kind of reasoning; it is the keen and merciless exposure of the utter irrationality of unreasonableness by one whose whole being is saturated with the conviction; this it is that gives students the strongest impulse to the formation of the habit of reasoning in this way.

So far as education consists in the formation of good habits, it is evident that the work of the teacher consists in putting the pupil in such a position as to induce him to act so that good habits will be the result. How can he do this? We shall get some light on this question when we consider the *factors* and *order* of development.

LIST OF QUESTIONS.

1. State and criticize Aristotle's definition of education.
2. What is the Law of Habit?
3. How does Sully define it?
4. Is he right?

5. Distinguish between *Habit* and *habits*.
6. What can you do to help your pupils become careful, cautious, and independent reasoners?

LESSON XXXVII.

DEVELOPMENT.



WE saw in the last lesson that a large part of the teacher's work consists in putting his pupils in such positions, bringing such influences to bear upon them as to induce them to act so that they may form good mental habits. That he may do this successfully, it is desirable for him to have a clear apprehension of the *order* and *conditions* of development.

When I say that the faculties of the intellect develop in a certain order, I mean that they *reach maturity in a certain order*. I believe that most of them begin to develop about the same time. Certainly perception, the second to reach maturity, involves memory, imagination, and reasoning. But although they begin to develop about the same time, they get their growth at very different times, though in an invariable order.

The order in which the faculties of the mind develop is the same in which we have considered them — sensation, perception, memory, imagina-

tion—first reproductive and then constructive—and thinking, in the three forms of conception, judging, and reasoning.

The pedagogical rules that follow from the order in which the faculties develop are very obvious, but none the less important. Since the power to have sensations is first developed, it should be first cultivated. Fortunately for the child, that part of his education is in the main attended to by nature. The incessant activity of the child but a few months old is a constant training of his senses under which his sensations become more and more definite. That part of his education is for the most part completed before he is old enough to go to school, though the teacher, especially in the kindergarten, can do something in this direction.

The faculty which ought especially to claim the attention of teachers in the primary grades is perception. That power is probably most active in the early years of school life. For this reason, children in these grades should be largely employed with objects. At this age, also, children are very active. They like to exercise their physical powers, and particularly dislike inactivity. This fact should

on no account be lost sight of by the primary teacher. *Keep children employed on work that is agreeable to them.* It is not the number of hours per day that children sit in the school-room, but the quantity and quality of work they do that educates them. When you cannot find anything for them to do, dismiss them. They will find employment in the fields and woods.

The period when memory reaches its maturity — Bain thinks it is when the child is ten or eleven — marks the time designated by nature for the special exercise of the memory. Some exercise of the mechanical memory there must be, some learning by heart — this is the time when it is easiest. This is the time for learning choice selections of prose and poetry. This is the time for learning the few dates in history which must be learned. Even at this age, pupils should not be required or permitted to memorize what they can attach no meaning to. It is proper enough to require them to memorize what they cannot comprehend, things, the causes of which, they cannot understand. But neither now nor at any other period should they be required to memorize what has no meaning to them.

Both reproductive and constructive imagination should receive the attention of the teacher. You should assist your pupils to develop reproductive imagination by encouraging them to give accurate descriptions of what they see, permitting nothing of importance to be omitted, nothing that does not belong there to be inserted. You should encourage the exercise of constructive imagination in connection with language lessons. Pictures, for example, should be made the subject of stories in which the children exercise their power of invention. An important part of your work in this connection consists in getting your pupils to read works of fiction adapted to their stage of development. In this way, you accomplish the double purpose of cultivating their imagination, and forming their taste for good literature.

The fact that thinking is the last of the powers of the mind to develop, designates the place in a course of studies where abstract studies, such as grammar, should be taken up. Instead of being taken up in the primary grades, technical grammar should be left to the High School. It is as absurd to require a child to study technical grammar as it would be to require him to do the work of a full-

grown man. Language lessons, in which he is trained to use grammar, should be given him from his first year at school. It is said that the pupils in the schools of Chicago would hardly understand you if you asked them to tell you the parts of speech of the words of any given sentence. They study grammar by studying the masterpieces of our great writers. Recognizing that the primary purpose of the study is to give pupils the power to use the language correctly, the teachers of Chicago put before their pupils models of good English, and require them to observe and imitate. This method of teaching grammar not only reaches the end in view, but accomplishes the no less important purpose of bringing the mind of the student into contact with good literature and cultivating his taste for it. But the science of grammar is beyond a child's comprehension because his reasoning powers are not enough developed, and the attempt to teach it to him, generally results in a disgust with the subject and dislike of school.

But you will not forget that though these powers get their growth in a certain order, they are all growing together and consequently should be exercised together to some extent. Though

the primary purpose of object teaching is the cultivation of the observing powers, reason and memory should not be neglected. And so all along. The skillful teacher will be constantly on the alert for an opportunity to awaken curiosity, to impart useful knowledge, to set his pupils to observing, to get them to reason, no matter what the subject may be, or the primary purpose of its being taught.

But why is it that the faculties of the mind develop at all? In other words, what are the *conditions* of development?

Evidently one condition is the action of natural objects on the organs of sense. We have seen that knowledge begins with sensation; that without sensation there would be no knowledge, and that a sensation is that mental state which directly follows upon that change in the brain which normally results from a stimulation of the nerves of sense. If, therefore, there were no stimulation of the nerves of sense there would be no sensation. If the eye never came in contact with light, there would be no sensations of color. If the ear never came in contact with vibrations of air, there would be no sensations of sound, and so

on. And inasmuch as feeling and willing are dependent on knowing, it is clear that we should neither feel, nor know, nor will, were it not for the action of natural objects on the organs of sense. Borrowing a phrase from Sully, we may call this influence the action of the *physical environment*.

But while the mind would be aroused from the torpor of entire inactivity simply by the action of physical objects on the organs of sense, it would remain in a very crude undeveloped state indeed, if this were the only influence brought to bear upon it. Whether the child would ever learn to walk if he never saw anyone walking, I will not undertake to say. But there is no doubt that he would never learn to talk if he did not hear language spoken. And when we realize the almost absolute dependence of thought on language, we shall see that the presence of other human beings is as essential to anything which deserves the name of mental development as it is to the physical support of the child.

If we wish to appreciate how extensive is the social environment, we have only to remember that *everything which brings mind into contact*

with mind is a part of it. This being true, it is clear that you may constantly extend your social environment if you choose to do so. When you grasp the meaning of a word before unknown to you, you bring your mind into contact with the mind of every one who has helped to give that word its meaning. You get from them a new instrument of thought, and the more definite the meaning of the word, and the more precisely you have caught it, the more help it will give you in thinking. In like manner, whenever you add to your knowledge of history, you extend your social environment. The knowledge of what other men have thought and done, of what they strove to do and what they failed to do, brings your mind into contact with their minds, enlarges by so much your social environment. Every fact of science which you learn has the same result. Every such fact was first a thought in the mind of its discoverer. He proved it and made a record of it in a book, and thus brings his mind into contact with the mind of every one who learns it.

LIST OF QUESTIONS.

1. What is meant when it is said that the

faculties of the intellect develop in a certain order?

2. Mention some of the pedagogical rules that follow from the fact that the faculties of the mind develop in a given order?

3. What faculty should claim the especial attention of primary teachers?

4. How should the imagination be trained?

5. How would you teach grammar to pupils below the age of twelve?

6. Mention some selections which you regard as suitable for that purpose.


7. What is meant by the conditions of development?

8. State and explain them.

9. Define sensation, perception, imagination, conception and reasoning.

LESSON XXXVIII.

DEVELOPMENT.

OW potent is the social environment in shaping the minds of men you will find it difficult to realize. At one time and in one country in the history of the world, we find one ideal prevailing, and in another, another. In Sparta, the brave soldier; in Athens, the symmetrically developed man; among the monks of the Middle Ages, the man who had completely renounced the world; among the Jesuits, the man who not only does what his superior directs, but who thinks and feels as his superior does, is the ideal man. What is the explanation of this? Are these ideals the conclusions of different chains of reasoning? Not at all. Question any of those who hold them, and the best answer you will get, the answer that goes to the root of the matter is that they *seem* to be true. And what is the explanation of this seeming?

I cannot answer that question with any thoroughness here, but there is no doubt that it is due

to the social environment. That acute writer, Walter Bagehot, in his suggestive book, called "Physics and Politics," points out the fact that in the great majority of cases our beliefs are due not to processes of reasoning, but to our imitating the beliefs of those around us. He says: "The main seat of the imitative part of our nature is our beliefs, and the causes predisposing us to believe this, or disinclining us to believe that, are among the obscurest parts of our nature. In 'Eothen' there is a capital description of how every sort of European resident in the East, even the shrewd merchant and the post captain, with his bright, wakeful eyes of commerce comes soon to believe in witchcraft, and to assure you in confidence that there 'really is something in it.' He has never seen anything convincing himself, but he has seen those who have seen those who have seen. In fact, he has lived in an atmosphere of infectious belief and he has inhaled it. Scarcely any one can help yielding to the current infatuations of his sect or party. For a short time — say some fortnight — he is resolute; he argues and objects; but, day by day, the poison thrives and reason wanes. What he hears from his friends, what he

reads in the party organ, produces its effect. The plain, palpable conclusion which every one around him believes, has an influence yet greater and more subtle; that conclusion seems so solid and unmistakable; his own good arguments get daily more and more like a dream. Soon the gravest sage shares the folly of the party with which he acts and the sect with which he worships." Every one must have noticed how much more he is influenced by the opinions of an able man whom he meets from day to day than he is by the opinions of a man whom he knows merely through books, but whose ability he estimates as much higher. The reason is that actual contact with a person holding a belief, appeals to the imitative part of our nature more strongly than the simple knowledge, gained by reading, that a certain individual holds the belief.

But not merely are beliefs imbibed in this way due to the social environment, but also, as we have seen, those which are reached by processes of reasoning, provided some other mind thought out the reasons for us. And when we remember how little originality there is in the world, we shall begin to see to what an extent our beliefs are

made for us, to what an extent they are due to our social environment. But what we feel and what we will, depend largely on what we believe. When one realizes all this, he begins to feel that he himself, like the food he eats and the coat he wears, is the product of all the world.

We see, then, that the mind develops because the conditions of development are supplied, and that these are the *physical and social environments*. Teachers and schools, of course, influence development as a part of the social environment of their pupils. They influence development by doing more perfectly that which is done to a considerable extent without their aid. What the teacher should do, as we have already seen, is to form as clear a conception as possible of what he wishes to accomplish, and then put the minds of his pupils under such influences that they may develop in the desired direction.

What, then, shall the teacher aim at? Hear Professor Huxley: "That man, I think, has had a liberal education who has been so trained in his youth that his body is the ready servant of his will, and does with ease and pleasure all the work that, as a mechanism, it is capable of; whose in-

tellec[t] is a clear, cold, logic-engine, with all its parts of equal strength, and in smooth working order; ready, like a steam engine, to be turned to any kind of work, and spin the gossamers as well as forge the anchors of the mind; whose mind is stored with a knowledge of the great and fundamental truths of Nature, and of the laws of her operations; one who, no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience; who has learned to love all beauty, whether of nature or art; to hate all vile-ness, and to respect others as himself."

With the exception of a single clause, you will note that this entire paragraph is a description of the kind of man that a liberal education should seek to produce. And no part of the man is left out. We should seek to train the body so that it may become the ready servant of the will, and "do with ease and pleasure, all the work, that as a mechanism, it is capable of." We should seek to train the intellect so that it may become a "clear, cold, logic-engine, with all its parts of equal strength, and in smooth working order." We should seek to train the feelings, so that the

man may be "full of life and fire," so that he may "love all beauty," and "hate all vileness," and "respect others as himself." We should seek to train the will, so that, in the language of Locke, our pupils may get the power to "cross their own inclinations and follow the dictates of reason."


Were it not that Professor Huxley seems to imply that equal stress should be laid on all the various faculties of the mind, I should be disposed to accept this as a fairly clear statement of what is meant by symmetrical development of the mind and of the man. But I do not believe that all the faculties of the mind are of equal importance. I believe, with Dr. Harris, that there is such a thing, as an over-cultivation of the mechanical memory. The function of the memory and the powers of observation is to put before the reason and the higher faculties of the mind materials to act on. When they are cultivated beyond that point, the mind as a whole is weakened, instead of strengthened. But would any one say that the reason can be too highly cultivated? Is it possible for a man to have too strong a will, or too intense a feeling of the beauty of what is beautiful, or the hatefulness of what is hateful?

LIST OF QUESTIONS.

1. State and illustrate what you mean by "the end of education."
2. State and illustrate what you mean by "physical and social environments."
3. What does Huxley understand by a liberal education?
4. Do you agree with him?
5. What is the mechanical memory?
6. What is the rational memory?

LESSON XXXIX.

DEVELOPMENT.

 WITH such a conception of your aim, how should you proceed to get the minds of your pupils to reach it? You must watch nature and then try to improve upon her. To cultivate the observing powers, nature presents objects; you must do likewise. But if you do no more than that, you will add nothing to the education of nature. Object lessons which consist in telling the pupils what *you* have observed, do nothing to cultivate their observing powers. You must get them to observe something which they have not observed before; you must get them to observe closely, carefully, systematically. How are you to do this? You can only do it by imitating nature. Nature supplies a motive. The incessant handling of this, and looking at that which so fill up the time of children, result from their interest in these things. You must interest them, but if you add nothing to the interest which the objects naturally excite, you will add nothing

to the education of nature. You must deepen that interest. You must stimulate their curiosity by asking them questions which they cannot answer about objects which they think they know all about. You must connect things they are not much interested in with things which they are interested in. You must give them the pleasure of finding out things for themselves. Above all, you must show an interest in their discoveries; the more the better, if you really have it. Herbert Spencer brings out this point so clearly and forcibly that I hope you will pardon me for quoting him at length. "What can be more manifest than the desire of children for intellectual sympathy? Mark how the infant, sitting on your knee, thrusts into your face the toy it holds, that you, too, may look at it. See when it makes a creak with its wet fingers on the table how it turns and looks at you; does it again and again look at you, thus saying as clearly as it can: 'Hear this new sound.' Watch how the elder children come into the room exclaiming: 'Mamma, see what a curious thing,' 'Mamma, look at this,' 'Mamma, look at that,' and would continue the habit did not the silly mamma tell them not to tease her."

Observe how, when out with the nurse-maid, each little one runs up to her with the new flower it has gathered, to show her how pretty it is, and to get her also to say it is pretty. Listen to the eager volubility with which every urchin describes any novelty he has been to see, if only he can find some one who will attend with any interest. Does not the indication lie on the surface? Is it not clear that we must conform our course to these intellectual instincts; that we must first systematize the natural process; that we must listen to all the child has to tell us about each object; must induce it to say everything it can think of about such objects; must occasionally draw its attention to facts it has not yet observed, with the view of leading it to notice them itself wherever they recur, and must go on, by-and-by, to indicate or supply new series of things for a like exhaustive examination? See the way in which, on this method, the intelligent mother conducts her lessons. Step by step she familiarizes her little boy with the names of the simpler attributes, hardness, softness, color, taste, size, etc., in doing which she finds him eagerly helping by bringing this to show her that it is red, and the other to make her feel that it

is hard, as fast as she gives him words for these properties. Each additional property, as she draws his attention to it in some fresh thing which he brings her, she takes care to mention in connection with those he already knows; so that by the natural tendency to imitate, he may get into the habit of repeating them one after another. Gradually, as there occur cases in which he omits to name one or more of the properties he has become acquainted with, she introduces the practice of asking him whether there is not something more that he can tell her about the things he has got. Probably he does not understand. After letting him puzzle awhile, she tells him; perhaps laughing at him a little for his failure. A few recurrences of this, and he perceives what is to be done.

When next she says she knows something more about the object than he has told her, his pride is roused; he looks at it intently; he thinks over all that he has heard, and, the problem being easy, presently finds it out. He is full of glee at his success, and she sympathizes with him. In common with every child he delights in the discovery of his powers. He wishes for more victories, and goes in quest of more things about which

to tell her. As his faculties unfold, she adds quality after quality to his list ; progressing from hardness and softness to roughness and smoothness ; from color to polish ; from simpler bodies to composite ones — thus constantly complicating the problem as he gains competence, constantly taxing his attention and memory to a greater extent, constantly maintaining his interest by supplying him with new impressions such as his mind can assimilate, and constantly gratifying him by conquests over such small difficulties as he can master. In doing this she is manifestly but following out that spontaneous process that was going on during a still earlier period, simply aiding self-evolution ; and is aiding it in the mode suggested by the boy's instinctive behavior to her. Manifestly, too, the course she is pursuing is the one best calculated to establish a habit of exhaustive observation ; which is the proposed aim of these lessons. To *tell* a child this and to *show* it the other, is not to teach it how to observe, but to make it a mere recipient of another's observations ; a proceeding which weakens rather than strengthens its powers of self-instruction — which deprives it of the pleasures resulting from successful activity — which presents

this all-attractive knowledge under the guise of formal tuition — and which thus generates that indifference and even disgust with which these object lessons are not infrequently regarded. On the other hand, to pursue the course above described is simply to guide the intellect to its appropriate food ; to join with the intellectual appetites their natural adjuncts — *amour propre*, and the desire for sympathy ; to induce by the union of all these an intensity of attention which assures perceptions alike vivid and complete ; and to habituate the mind from the beginning to that practice of self-help which it must ultimately follow.”

So it is with every other faculty of the mind ; your work consists in supplying the conditions of development — presenting the material appropriate to the faculty, and seeing to it that there is a motive to induce the pupil to exercise it.

But while I agree with those educators who think that the work of the school should be made pleasurable, both in order that the pupil may have the strongest motive for studying, and in order that the teacher may have confidence that his subjects and methods only call for a normal exercise of the powers of his pupils, I think that the doc-

trine is often exaggerated. One of the most popular of our educational papers some time ago said that "the true management of any recitation will make it just as exciting and just as much fun as a base ball game can possibly be," and in a similar view, Horace Mann said: "Tell a child the simplest story adapted to his stage of mental advancement, and he will go without play, leave food untasted," and so on. To all this, I can only reply that I have seen no such recitations and know no such children. If it were practicable to give each boy and girl a separate teacher, as Locke recommended, we might possibly avoid requiring a pupil to study any subject when he did not feel like it, or when he preferred to study something else. But in a system of class instruction this is impossible. At a given hour in the day, your pupil *must* study arithmetic. Perhaps he has just been reciting his history lesson. If you have made the recitation interesting, he would like to go on with that. You have told him of certain books that treat the matter more fully and he is eager to look them up at once. Hence the more successful you are in interesting your pupils, the more impossible it is to

avoid an element of irksomeness in the work of the school.


And if it were possible to rely entirely on interest as a motive, I do not believe it would be desirable. It is an exceedingly important part of education for one to acquire the power to do disagreeable things. To say nothing of more important reasons, unless you help your pupils to form the habit of doing what is reasonable, whether it is pleasant or not, their intellectual development will certainly suffer, since no other motive can be relied on to make the boy do the work he ought to do at school, and the man read the books he ought to read in after-life.

LIST OF QUESTIONS.

1. How should we proceed to bring about the development of a child?
2. Illustrate at length.
3. Can pleasure alone be relied on as a motive to induce pupils to study?
4. Why not?
5. What did Horace Mann say about it?
6. Who was Horace Mann?

LESSON XL.

THE STUDY OF CHILDREN.

“LL the roads in the Roman Empire led to the city of Rome.” At every turn and corner in our study of our subject, we have seen that successful teaching demands a close and careful and systematic study of children. At this stage in the history of the world, men have come to clearly realize the fact that no matter what happens in the physical world, there is a cause for it. If a watch stops, or a lock refuses to act, there is a cause for it, and a patient study of the facts of the case may enable us to discover and remove it. That is precisely the attitude which, as it seems to me, teachers should take toward their pupils. If your pupils are not interested in any particular subject, if they are inattentive, if they do not like to go to school, there is a cause for it, and it is your business to learn what it is. Do not be guilty of the stupidity of saying that some boys “naturally” dislike school. That is an easy explanation to which lazy teachers have a

great tendency to resort. But it has a painful likeness to some of the explanations of the Middle Ages. "Moving bodies have a natural tendency to stop," said the scholars of that time. "Some boys naturally dislike books," say many of our teachers now. Precisely as a more careful study of the facts has thoroughly discredited the former explanation, so I believe a careful study of the facts will thoroughly discredit the latter.

That the importance of the study of children is beginning to be generally recognized is one of the most encouraging signs of the times. In the beginning of the study of Pedagogy in this country, it was confined almost entirely to a study of methods. Later, it was seen that the most fruitful study of Pedagogy includes a study of the principles that underlie methods, that in order to know *how* to deal with the human mind, we must know why we deal with it thus and so, and that to know the why of our procedure, we must know the laws that govern it. And little by little educators have come to see that after all the text book on Psychology, which it is of most importance for teachers to study, is one whose pages are ever open before them — the minds of their pupils, and the

children with whom they come in contact. One of the leading institutions for the training of teachers in the country encourages its students to make a careful and systematic study of children.* Thinking you might find the directions and cautions, etc., relating to the subject which it gives to its students, helpful and suggestive, I have concluded to give them entire. They are as follows:

OBSERVATION OF CHILDREN.

"A. Cautions.

- I. Do not seek the remarkable sayings and doings of precocious children. Seek what is common and habitual.
- II. Report only the observation without comments or reflections.
- III. Never allow a child to know that he is observed.
- IV. Avoid drawing conclusions, even in your own mind, from too few data. Darwin observed worms for many years before he dared write about them.

*The New York College for the Training of Teachers. This is also done with great thoroughness at the Normal School in Worcester, Mass.

B. Things to be observed.

1. Knowledge.

a. The development of the animal senses.

Which develop first? Which most rapidly?

b. Learning to talk.

1. How young?

2. What words first?

3. How many words in a given time?

c. How do children gain knowledge?

1. When examining a new object, what quality first strikes them form, color, taste, use?

2. When asking questions, what kind do they ask?

d. How clear are the mental pictures which they form?

e. A child's curiosity.

1. How limited?

2. How satisfied?

3. Difference in children in degree of curiosity.

f. In what line is the greatest ignorance displayed?

g. The effect of parentage and nationality on the extent and direction of a child's knowledge.

- h.* How do children gain ideas of beauty?
Of personal rights?
- i.* When do they get the idea, "I am I"?
- j.* Study the capabilities of children, as shown in drawing, sewing, building, planning, etc.

II. Attention.

- a.* How can you gain a child's attention?
How keep it?
- b.* How cultivate attention?
- c.* Under what circumstances have you observed long continued concentration?

III. Imagination.

- a.* Is imagination natural to children?
- b.* Does the power increase with age?
- c.* Note examples of lying, real or apparent, resulting from imagination.
- d.* Note the result of reading "Arabian Nights," etc.
- e.* Study children's ideas of the sky, of death, of God, and spiritual things.

IV. Reason.

- a.* How soon do children begin to reason?
- b.* Is there any difference in reasoning power between boys and girls?

- c.* Seek examples of the reasoning power in children.

V. Habit.

- a.* How soon do children begin to form habits?
- b.* Note the formation of habits.
 - 1. What are formed with ease?
 - 2. What with difficulty?
 - c.* How are habits formed?
 - d.* How are they broken?

VI. Memory.

- a.* What kind of memory is most found in children?
- b.* When do they exhibit striking differences?
- c.* What examples of long memory?
- d.* What instances of logical memory, of recognition without recollection?

VII. Feeling.

- a.* Likes and dislikes.
 - 1. Things.
 - a.* Amusements, plays, and games—social and solitary.
 - b.* Favorite stories, songs, and myths.
 - c.* Animals, flowers, etc.

d. Places.

2. Persons.

a. Attachments and aversions.

b. Shyness, self-consciousness, pride, fear, anger.

VIII. Conscience.

a. Is it innate?

b. How soon are there any signs of conscience?

c. Examples of confession of wrong-doing brought about by conscience alone.

IX. Will.

a. Do young children have strong wills?

b. When should obedience begin to be required? How?

X. Ways of dealing with children.

a. When naughty.

b. When afraid.

c. When shy.

d. When self-conscious.

e. When injured.

f. When angry.

XI. Progress of children.

a. In the acquisition of knowledge.

1. Through the senses.

2. Through the memory.
 - b.* In overcoming faults.
 - c.* In the development of will.
 - d.* Compare the progress of children with the progress of brutes *e. g.* teaching a child and a dog to pick up a stick.

XII. General observations.

- a.* In what respects do children differ most?
- b.* What is the influence of heredity?
- c.* To what extent will environment and training overcome the effects of heredity?

QUESTIONS FOR CHILDREN—TO FIND OUT THE CONTENTS AND WORKINGS OF THEIR MINDS.

[The plan involves the selection of some ten children, differing in ability, training and school advantages, in groups of about the same age. Each one is to be asked every question alone. The answers are to be accurately recorded, in uniform style, for filing and comparison.]

I. Observation.

1. How many legs has a fly? How many wings?
2. What can a fly do that you can not?

3. When a horse eats grass, does he walk forward or backward? A cow?
4. How many toes has a horse?
5. How many feet has a snake?
6. How does a robin look? What kind of a nest does she build?
7. What colored clothes does a policeman wear?
8. How does a dog cross a deep stream?
9. What color is the sky?

II. Information.

1. Who is the President of the United States?
2. Where do potatoes come from?
3. What are your shoes made of? What is leather?
4. Where does milk come from?
5. Did you ever see the surface of the earth?
6. Why is it dark at night?
7. How are the streets of the city lighted at night?

III. Sense of beauty.

1. What is the prettiest thing you ever saw?
2. Why do you think it is pretty?
3. What kind of music do you like best?
4. What are the prettiest flowers you know?

5. Do you like pictures? Why?

IV. Personal tastes.

1. What games do you like to play best?
Why?

2. What would you like for Christmas?

3. What little boy or girl do you like the best? Why?

4. Which do you like better city or country?
Why?

5. Would you rather ride in the cars or in a carriage?

6. What colored flowers do you like best?

V. Imagination.

1. If you should go to the moon, what would you see?

2. What are fairies.

3. How does an angel look?

4. What is lightning?

5. What would you like to do when you grow up?

6. What do dogs think about?

7. Can they talk to each other? How?

8. What is Heaven like?

9. How far away is the sky?

VI. Reasoning power.

1. Why does not it snow in summer?
2. Why does a cat make so much noise when she walks?
3. Where do the fishes go when it rains?
4. Why does not a dog walk on two legs?
5. Are snow and rain alike?
6. Why does a fire engine go so fast?
7. What is the use of doors?
8. Why do not grown up people go to school?
9. Do boot blacks like to have it rain?
10. Why does not grass grow in winter?"

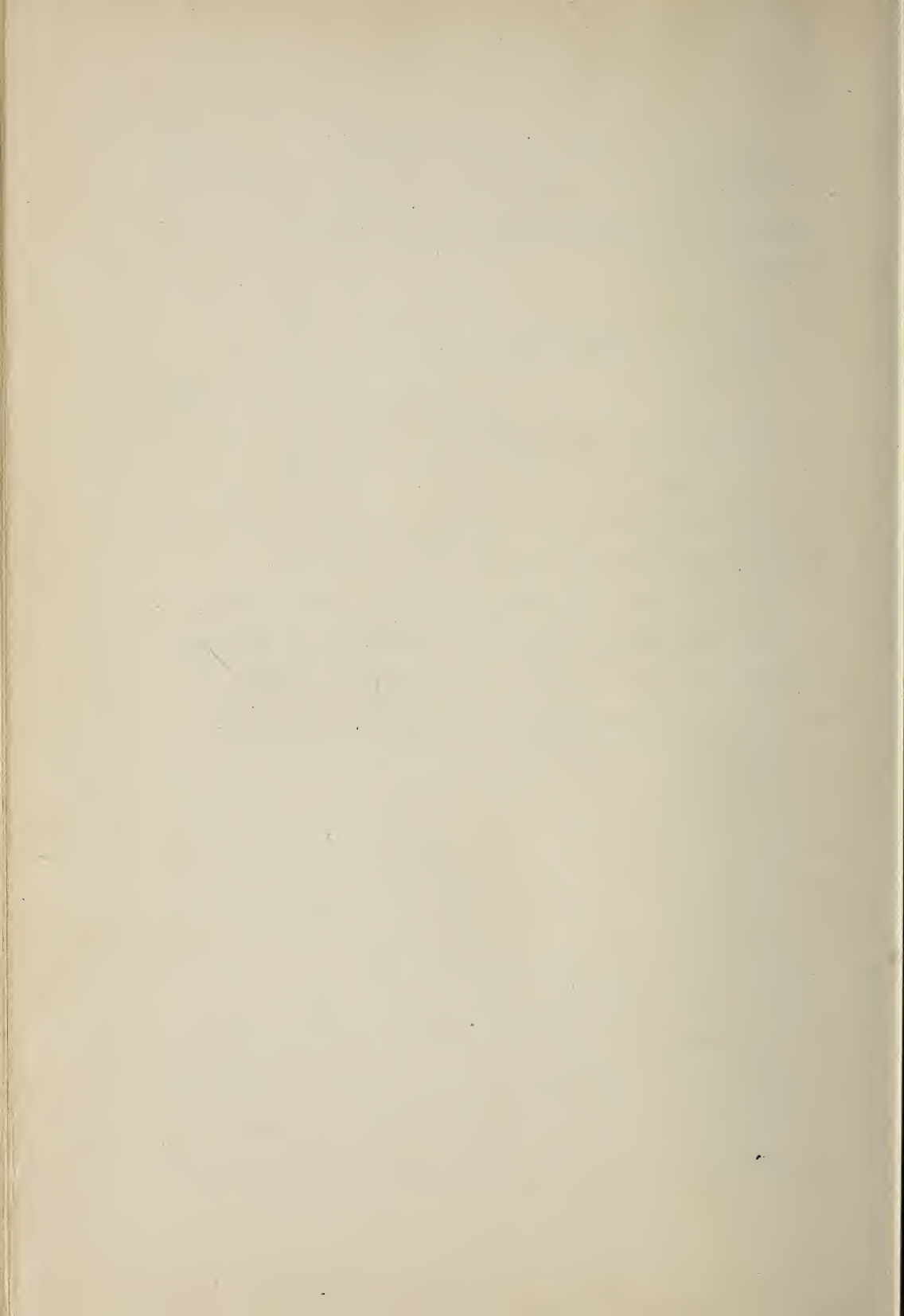
But if you wish to get the widest and deepest, and at the same time the most helpful knowledge of the human mind, do not confine yourself to the study of your own mind and that of children, but study the mind of man as it is revealed in history. The sluggish Oriental, the intellectual Athenian, the superstitious Knight of the Middle Ages, are so many different forms into which our common human nature has been carved by that marvelous sculptor—education. The teacher who studies history from the point of view of Psychology will not only find himself in possession of constantly-growing and useful and inspiring knowledge of historical facts, but he will find his knowledge of

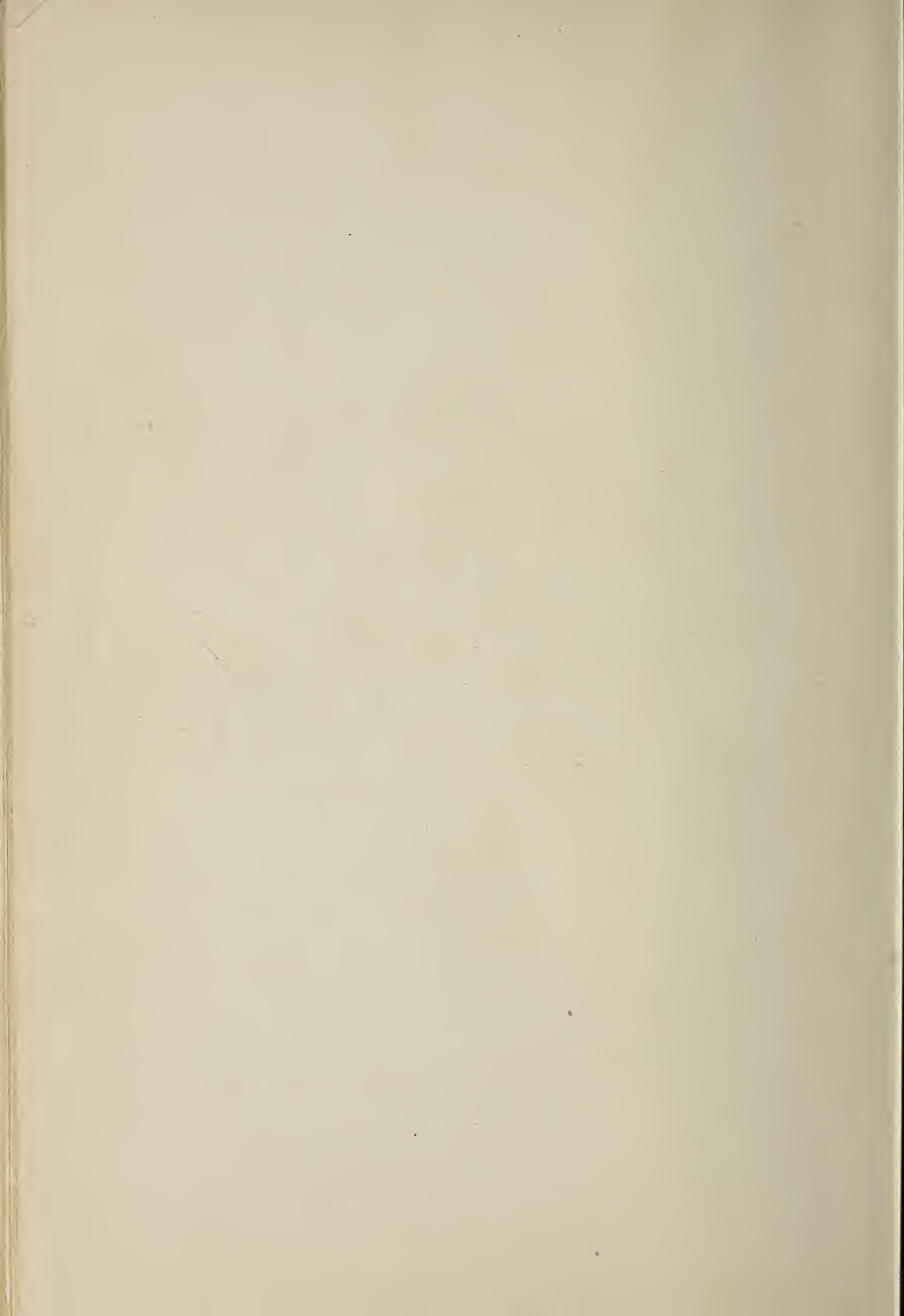
the human mind enlarging, and his realization of the almost omnipotence of education ever growing more vivid.

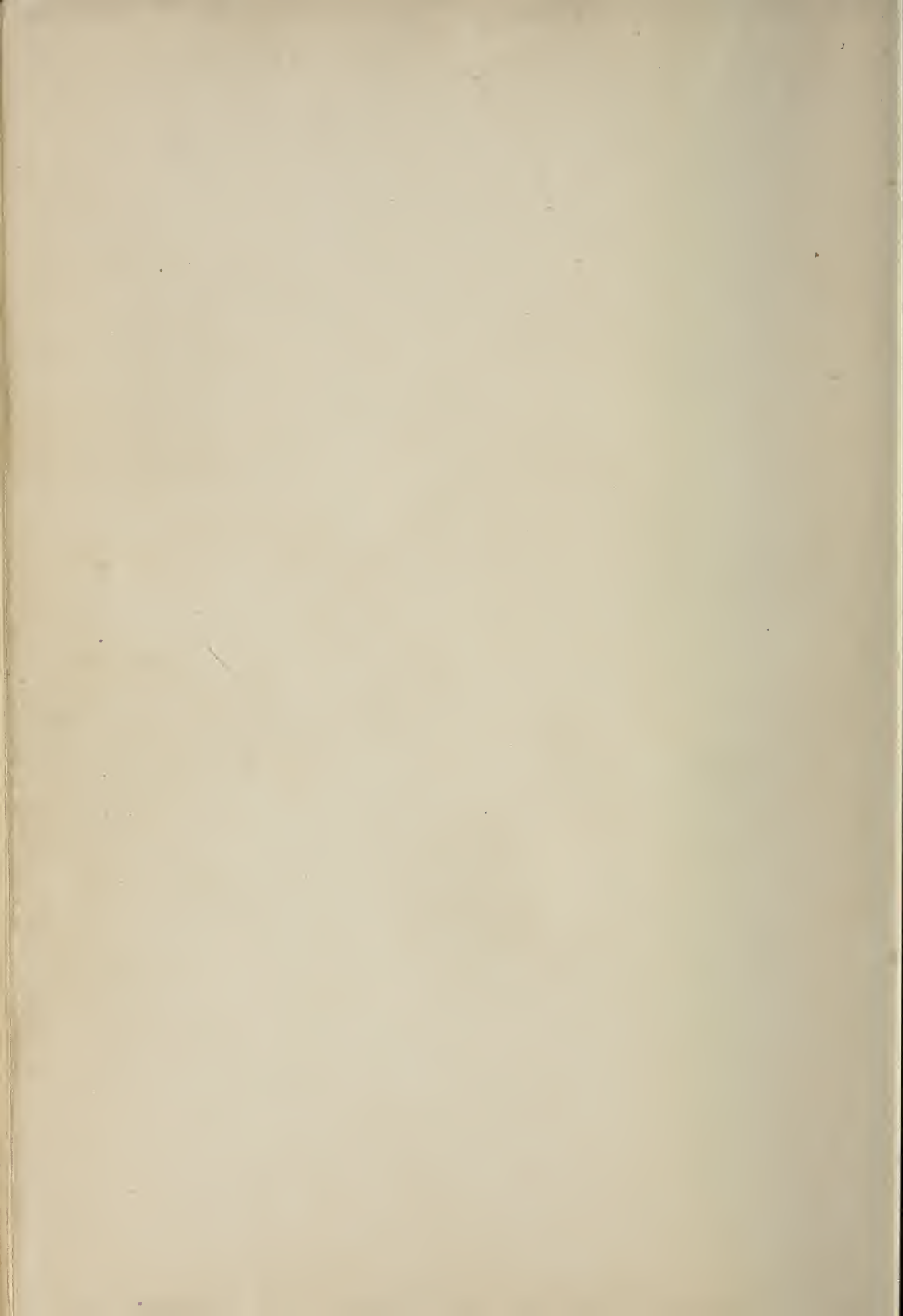
LIST OF QUESTIONS.

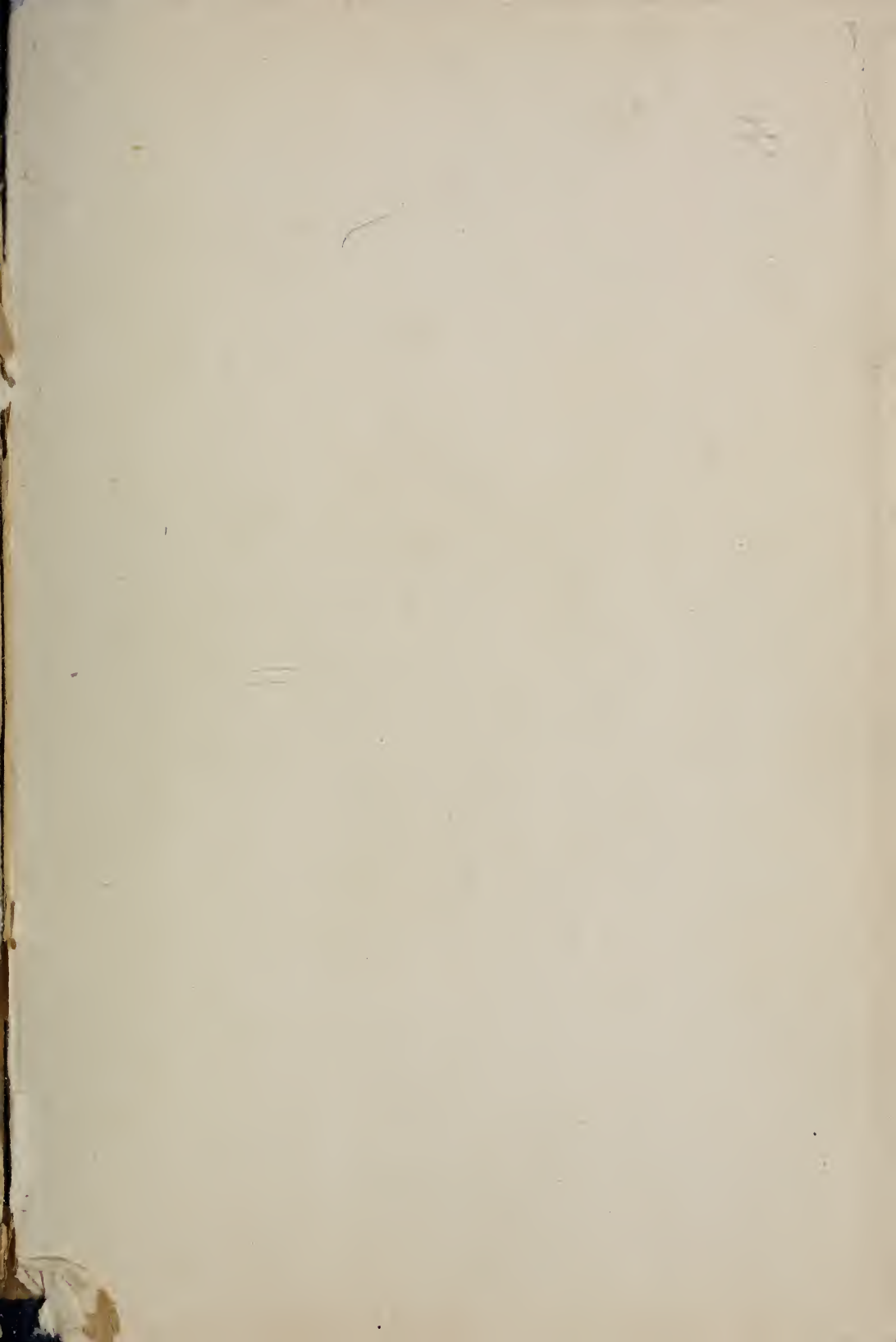
1. What was the character of the first study of Pedagogy in this country?
2. How is it studied now?
3. Mention some of the cautions which you should bear in mind in studying children.
4. Mention some of the things to be observed.
5. Mention some of the questions to be asked in learning the contents of children's minds.
6. Can you study Psychology in history?

THE END.









LIBRARY OF CONGRESS



0 021 068 025 1